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ABSTRACT

A study used data gathered by the National Assessment of Educational Progress (NAEP) to address three issues: (1) What do the school and teacher reports reveal about current patterns of instruction? (2) How well do these results agree with earlier findings based solely on student reports? and (3) what relationships exist between student outcomes on the one hand and instructional practices (at school and classroom levels) on the other, after allowing for the effects of important related factors such as socioeconomic status? Findings suggest that in both reading and writing instruction, teachers seem to have effected a compromise between educational practices that are treated in the pedagogical literature as incompatible. Findings also show that the overall portrait of instruction that emerges from the analyses of teacher report data is very similar to that that emerges from the student data. Findings regarding relationships between student outcomes and instructional practices included noting a stronger relationship between the focus of instruction and student attitudes than between the focus of instruction and student proficiency. (Thirty-two tables of data are included, 24 references are attached, and appendixes contain 4 tables of data.) (SR)

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**Policy and Practice in the Teaching of Literacy:
Explorations of the NAEP Database**

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March 1990

FINAL REPORT

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Table of Contents

Table of Contents	i
List of Tables	ii
Acknowledgments	iv
 I. Introduction	 1
Background to the 1984 Assessment	1
The Present Study	3
 II. Current Practice in Literacy Instruction	 6
Approaches to the Teaching of Writing	7
Approaches to the Teaching of Reading	16
Quality of Instructional Materials	19
Relationships between Coursework, Teaching Experience, and Preferred Approaches to Instruction	24
Relationships between Teacher and Student Reports	32
 III. Influences on Literacy Achievement	 42
Estimating Proficiency and Attitudes	43
Developing Indices of Factors Related to Performance	44
Procedures for Carrying out the Regressions	49
Overall Results of the Regression Analyses	51
The Influence of Specific Instructional Factors	56
 IV. Conclusions	 67
Current Practice	67
Relationships between Student and Teacher Reports	69
Relationships between Student Outcome Measures and Instructional Practice	70
Using the NAEP Database	74
 References	 76
 Appendix Tables	 79

List of Tables

1.	Principal Components Analysis of Teachers' Reports of Instructional Practices: Grade 11	8
2.	Principal Components Analysis of Teachers' Reports of Instructional Practices: Grade 8	9
3.	Principal Components Analysis of Teachers' Reports of Instructional Practices: Grade 4	10
4.	Teachers' Reports of the Importance of Specific Instructional Practices	12
5.	Types of Instructional Materials Used in the Teaching of Writing	15
6.	Principal Components Analysis of Teachers' Reports of Instructional Practices: Grade 4 Reading	17
7.	Percentage of Students whose Teacher Reports Using Selected Materials and Approaches Regularly: Grade 4	18
8.	Teachers' Reports about the Quality of Instructional Materials	20
9.	Teachers' Involvement in Materials Selection	22
10.	Judged Quality of Writing Textbook, by Teachers' Involvement in Materials Selection	23
11.	Teachers' Reports of Formal Training in the Teaching of Writing and Reading	25
12.	Percent of Students whose Teachers Report Training in the Teaching of Writing or Reading, by Years of Teaching Experience	27
13.	Percent of Students whose Teachers Report Selected Practices Are "Very Important," by Levels of Coursework: Grade 11	28
14.	Percent of Students whose Teachers Report Selected Practices Are "Very Important," by Years of Teaching Experience	30
15.	Percent of Students whose Teachers Report Selected Practices Are "Very Important," by Years of Experience and Levels of Coursework: Grade 11	31
16.	Percent of Teachers and Students Reporting Selected Emphases in Evaluation	34
17.	Percent of Students' Reporting Evaluation Comments "Almost Every Time," by Teachers' Ratings of Importance of Criteria: Grade 11	36

18.	Teachers' and Students' Reports of the Frequency of Writing Assignments and Amount of Time Devoted to Writing Instruction in English Class.....	38
19.	Percent of Students Reporting They "Almost Always" Use a Particular Behavior while Writing, by Teachers' Ratings of the Importance of Selected Instructional Practices: Grade 11.....	40
20.	Variables Included in Composite Measure of Reading Attitudes.....	45
21.	Variables Included in Composite Measure of Writing Attitudes.....	46
22.	Variables Included in Composites Based on Student Reports on Instruction	50
23.	Change in Percent of Variance Explained for Proficiency Measures, by Block.....	52
24.	Change in Percent of Variance Explained for Attitude Measures, by Block.....	53
25.	Relationships between Instructional Time and Reading Proficiency, After Blocks 1-7	57
26.	Relationships between Instructional Time and Writing Proficiency, After Blocks 1-7	58
27.	Relationships between Instructional Time and Reading Attitudes, After Blocks 1-7	60
28.	Relationships between Instructional Time and Writing Attitudes, After Blocks 1-7	61
29.	Relationships between Focus of Instruction and Reading Proficiency, After Blocks 1-7	63
30.	Relationships between Focus of Instruction and Writing Proficiency, After Blocks 1-7	64
31.	Relationships between Focus of Instruction and Reading Attitudes, After Blocks 1-7	65
32.	Relationships between Focus of Instruction and Writing Attitudes, After Blocks 1-7	66

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When the project moved to the University at Albany, the research team was reconfigured, with Michael Green joining as a co-investigator.

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The opinions expressed herein are our own, and do not necessarily reflect the position or policy of either funding organization; no official endorsement should be inferred.

I. Introduction

Since the publication of Reading, Thinking, and Writing in 1981, the National Assessment of Educational Progress has issued a variety of reports indicating on the one hand that American school children are relatively proficient in basic reading and writing skills, and on the other that they have considerable difficulty in tasks that require even a modicum of thinking and reasoning. In an effort to make the NAEP data more policy-relevant, these reports have also discussed current trends in instruction, and have related student achievement to a variety of home, school, and community factors (Applebee, Langer, & Mullis, 1985, 1986a, 1986b, 1987, 1988).

Though interesting, the various analyses reported by NAEP rely entirely on student reports about instruction, and do not utilize the extensive information that is available from teacher and school questionnaires that were administered as part of the assessment. This raises questions both about the validity of some of the analyses (How accurately do student reports reflect the nature of instruction?), and about the varieties of additional information about current policy and practice that may lie untapped in the unanalyzed data sets. The present study addresses both those questions, and adds a third: How robust are relationships between instructional and policy variables on the one hand, and achievement on the other, when the influence of relevant control variables is accounted for first?

Background to the 1984 Assessment

In 1983-84, NAEP assessed approximately 20,000 students in fourth grade (age 9), 22,000 in eighth grade (age 13), and 23,000 in eleventh grade (age 17) attending public and private schools. Eighth graders were assessed in the fall, fourth graders in the winter, and eleventh graders in the spring. Reading and writing proficiency were both assessed, allowing proficiency in these two aspects of literacy to be related to one another as well as to a variety of instructional practices.

To assess writing proficiency, students at each grade level were administered from one to

four out of a total of 22 writing tasks designed to reflect a range of reasons for writing, including informative, persuasive, and imaginative purposes. Fifteen of the 22 items were used at each grade. Although no individual student responded to all 15 tasks, each task was given to a national probability sample of approximately 2000 students. A balanced incomplete blocks (BIB) design was used, with items spiraled through the sample so that every item occurred in conjunction with every other item in at least one block. The performance of individual students was scaled using an Average Response Method (ARM) (see Beaton, 1987) to yield a writing proficiency score on a scale from 100 (low) to 400 (high).

To assess reading, students were asked to read prose passages or poems and to answer questions about them. The passages were drawn from a variety of genres, including fiction as well as nonfiction. Questions about the passages included a range of multiple-choice questions asking students to locate specific information, to make inferences based on that information, and to recognize the main idea. Other questions were open-ended, requiring students to provide written support for their interpretations or evaluations. Some 340 different items were included in the assessment. The number administered at each grade ranged from 176 at grade 4 to 196 at grade 11. Item-Response Theory (IRT) techniques were used to estimate individual students' levels of proficiency on a scale from 0 (low) to 500 (high).

Students also responded to a variety of questions focusing on their home background, school experiences, and literacy-related attitudes and behaviors. These questions were divided into common background questions administered to all students, and other questions that were rotated in blocks through the sample.

School and principal questionnaires were administered at all participating schools. These gathered information about demographic characteristics of the school and community, participation in various federal programs, patterns of supervision, minimum competency testing, and special programs related to the teaching of reading and writing.

Teacher questionnaires were designed to gather information about each teacher's training and experience, and about instructional practices in the teaching of reading and writing.

Certain of the questions roughly paralleled items asked on the student questionnaires, though none were identical. Teachers were asked to respond about their teaching in general, not about their approaches with particular students or classes.

Sampling

The NAEP assessments use a stratified, multi-stage sampling procedure (see Beaton, 1987). The first stage involves defining primary sampling units (PSUs)--typically counties; classifying the PSUs into strata defined by region and community type; and randomly selecting PSUs. The second stage involves enumerating, stratifying, and randomly selecting schools within each selected PSU. The third stage involves randomly selecting students within each selected school.

School and principal questionnaires were distributed to each sampled school; teacher questionnaires were distributed to teachers identified as the primary English/language arts teacher for subsamples of the selected students at each grade.

The Present Study

The analyses reported here were begun as part of a project funded by a Spencer Foundation seed grant to Stanford University. Part way into the project, additional funding was received from the U.S. Office of Educational Research and Improvement (OERI). The two projects were combined, and included three parts: an initial period of work that focused in large part on exploratory analyses familiarizing ourselves with what is and is not available on the data tapes, and the types of analyses that can and cannot be done using them; an exploration of current practice in literacy instruction, based on previously unreported data from the teacher questionnaires; and explorations of relationships between policy and practice variables in literacy instruction, and student achievement.

This report will focus on three issues: What do the school and teacher reports reveal about current patterns of instruction? How well do these results agree with earlier findings based solely on student reports? What relationships exist between student outcomes on the one hand

and instructional practices (at school and classroom levels) on the other, after allowing for the effects of important related factors such as socioeconomic status?

Procedures

A series of different analyses were run on the NAEP data base in order to determine the relationship between teaching practices and student achievement. To facilitate exploratory analyses, we downloaded some of the smaller files for analysis on microcomputers using SPSS/PC software; this included teacher and school files at each grade. Once the microcomputer versions were prepared, they greatly facilitated exploratory analyses.

The first set of analyses generated contingency tables of selected pairs of variables in the teacher and school files separately. These analyses were carried out for all three grade levels.

The second series of analyses used factor analysis to model different sets of variables of interest. These analyses were carried out on data from the student files concerning writing background, attitudes, practices, and instructional experiences, and on data from the teacher files concerning instructional approaches.

Some of the analyses we wanted to undertake involved information from more than one of the student, teacher, or school files for a given grade. To do this, it was necessary to merge these files in order to create new files, one for each grade level, which incorporated the information from the student, teacher, and school files. We took the student files as the basis by which the other files would be merged, with the corresponding teacher and school files being merged onto the record for each student. The creation of these files enabled us to make comparisons at the student, classroom, and school levels.

Because the teachers in the assessment were identified through the students, data are reported in terms of the percent of students with teachers who report a particular emphasis. Effective *n*'s in such analyses are weighted, however, to reflect the number of independent teacher reports, rather than the number of students.

A variety of indices and composites drawn from the various initial analyses were then used in the prediction of student achievement from teacher and school policy variables while

adjusting for students' background.

In the present report, comparisons relating student and teacher responses on similar items are reported in Part II. Results of the regression analyses relating student achievement to other variables are discussed in Part III.

II. Current Practice in Literacy Instruction

The 1980s witnessed a redefinition of the conventional wisdom about the nature of effective literacy instruction. Spurred by research findings that emphasize the variety of cognitive and linguistic processes involved in comprehending and producing text, by inservice efforts such as the National Writing Project, and by the practical suggestions of educators such as Peter Elbow (1981), Kenneth Goodman (1986), Donald Graves (1983), Jerome Harste (Harste, Short, & Burke, 1988), and Kenneth Macrorie (1985), journal articles and convention speeches have increasingly emphasized "process-oriented" approaches to the teaching of literacy. In the teaching of writing, process-oriented approaches usually involve some combination of the following activities: prewriting activities, peer and teacher response during the writing process, a stress on revision and multiple drafts, the provision of broader audiences for student work, and a deferment of evaluation until late in the process. Such approaches stand in contrast to traditional approaches, which tend to emphasize the structure and content of the final written product. Such product-oriented instruction is more likely to include attention to a variety of rhetorical and grammatical rules, and to the use of traditional formulae such as compare and contrast, thesis and elaboration, or the five paragraph theme.

In the teaching of reading, process-oriented approaches are likely to include: an emphasis on comprehension strategies rather than on decontextualized decoding or phonics skills; provision of rich language experiences; individualized reading programs; concern with prior knowledge; and a focus on the student's own interpretations of the selections read.

Yet in spite of the extent to which the process philosophy dominates current pedagogical theory, previous analyses of student reports suggest that although some students are experiencing systematic process-oriented instruction, in the majority of classes there has been little change from traditional emphases (Applebee, Langer, & Mullis, 1986a, 1986b). To investigate this further, we turned to the teacher reports on literacy instruction.

Approaches to the Teaching of Writing

Background questions in the 1984 assessment gave particular attention to the teaching of writing at all 3 grades, and to the teaching of reading only at grade 4. Thus the most complete information about literacy instruction deals only with writing. As part of the teacher questionnaire, teachers were asked to rate the "importance" of 35 techniques associated with the teaching of writing. These techniques include a variety of practices that are compatible with virtually any approach to the teaching of writing (e.g., extensive reading), as well as a few that are most directly associated with traditional approaches (correcting all errors) or process-oriented approaches (talking with peers).

In order to reduce the 35 variables into related sets, a principal components analysis with a varimax rotation was carried out. A six-factor solution accounted for 40.4 percent of the variance in the original ratings at grade 11. The results of the factor analysis are summarized in Table 1. The first factor, Sharing a Message, reflects an emphasis on the ideas that students express in their writing, and on the provision of a responsive audience for those ideas. The second factor, Process Strategies, is defined by an emphasis on teaching prewriting and revision techniques. The third, Emphasis on the Conventions of Written English, is dominated by correction of errors and attention to spelling and grammar. Factor 4, Emphasis on Clarity, reflects concern with such traditional features of clear writing as organization and development of ideas. Factors 5 and 6 reflect teachers' use of various approaches to assessment. Factor 5 includes such Informal Assessment Techniques as observing writing activities, relying on peer evaluations, and evaluating collections of student writing over time. Factor 6 includes such Formal Assessment Techniques as teacher-made and standardized tests.

With minor variations in loadings, this factor structure was replicated in the samples at grades 8 and 4 (Tables 2 and 3). A six-factor solution accounted for 41.2 percent of the original variance at grade 8 and 44.1 percent at grade 4.

TABLE 1. Principal Components Analysis of Teachers' Reports of Instructional Practices: Grade 11

	Sharing a Message	Process Strategies	Writing Conventions	Clarity	Informal Assessment Techniques	Formal Assessment Techniques
Help understand topic	0.24	0.13	-0.16	0.37	-0.03	-0.32
Encourage extensive reading	0.39	0.07	0.10	0.14	-0.04	-0.28
Copying passages	0.07	0.02	0.36	-0.27	-0.21	-0.27
Think of author's purposes	0.38	0.06	0.14	0.37	0.01	0.07
Consider prospective reader	0.39	0.17	0.06	0.07	-0.35	0.37
Provide common topic	0.26	0.22	-0.04	0.19	-0.13	-0.15
Requiring outline	-0.03	0.51	0.30	0.02	-0.05	-0.18
Publishing students' work	0.53	0.30	0.03	-0.16	-0.07	-0.06
Talk with teacher about papers	0.45	0.46	0.03	-0.04	-0.06	-0.15
Talk with peers about papers	0.42	0.43	-0.20	-0.07	-0.27	0.15
Giving multiple grades	0.14	0.36	0.28	-0.03	0.05	-0.26
Correcting all errors	-0.06	0.09	0.61	0.15	0.21	-0.10
Preparing several drafts	0.07	0.65	0.09	0.21	-0.10	0.15
Teaching prewriting strategies	0.11	0.74	-0.08	0.21	-0.14	0.01
Teach revising techniques	0.19	0.67	-0.01	0.27	-0.10	0.06
Evaluation: Length	0.04	-0.06	0.36	0.04	-0.01	0.05
Evaluation: Organization	-0.07	0.20	0.16	0.64	-0.05	-0.09
Evaluation: Development	0.04	0.19	0.08	0.72	-0.09	-0.01
Evaluation: Quality of ideas	0.38	-0.02	0.12	0.46	0.05	-0.05
Evaluation: Word choice & phrasing	0.34	0.08	0.36	0.40	0.03	0.03
Evaluation: Spelling, grammar	-0.06	0.13	0.73	0.16	0.08	-0.02
Evaluation: Neatness, handwriting	0.16	0.04	0.67	-0.09	-0.01	-0.10
Evaluation: Following directions	0.03	0.02	0.49	0.21	-0.03	-0.06
Evaluation: Write for special purpose	0.33	0.03	0.30	0.28	-0.19	0.23
Evaluation: Address a special reader	0.58	0.16	0.14	0.09	-0.22	0.15
Evaluation: Risk-taking ideas	0.65	0.09	-0.06	0.15	-0.05	-0.04
Evaluation: Expressing feelings	0.63	-0.03	0.07	0.16	-0.07	-0.13
Evaluation: Clarity	0.14	0.07	0.15	0.49	-0.11	0.07
Assessment: Teacher-made individual test	-0.27	0.00	-0.09	0.07	0.02	0.45
Assessment: Teacher-made group test	0.09	-0.08	0.00	-0.07	0.04	0.50
Assessment: Standardized tests	-0.05	0.10	-0.12	0.01	0.20	0.55
Assessment: Observe writing activity	0.08	-0.09	0.03	-0.07	0.58	0.09
Assessment: Listen to students read own writing	-0.16	-0.01	-0.03	-0.01	0.66	0.21
Assessment: Peer evaluations	-0.17	-0.14	0.16	-0.06	0.66	-0.06
Assessment: Evaluate collection over time	-0.10	-0.08	-0.02	-0.03	0.55	0.03

N = 855.

TABLE 2. Principal Components Analysis of Teachers' Reports of Instructional Practices: Grade 8

	Sharing a Message	Clarity	Process Strategies	Writing Conventions	Informal Assessment Techniques	Formal Assessment Techniques
Help understand topic	0.19	0.22	0.25	-0.02	0.00	-0.13
Encourage extensive reading	0.43	0.14	-0.03	0.08	0.09	-0.14
Copying passages	0.39	-0.13	-0.11	0.30	0.08	-0.30
Think of author's purposes	0.40	0.17	0.22	0.06	-0.03	0.02
Consider prospective reader	0.45	-0.05	0.23	0.05	-0.19	0.14
Provide common topic	0.40	0.08	0.26	0.09	-0.30	0.05
Requiring outline	0.31	0.03	0.37	0.16	0.19	-0.22
Publishing students' work	0.48	0.02	0.12	-0.10	-0.19	-0.09
Talk with teacher about papers	0.47	0.14	0.26	-0.01	-0.17	-0.14
Talk with peers about paper	0.36	0.09	0.24	-0.11	-0.50	0.03
Giving multiple grades	0.36	-0.00	0.31	0.14	0.17	-0.05
Correcting all errors	-0.01	0.03	0.25	0.60	0.19	-0.13
Preparing several drafts	0.04	0.06	0.67	0.05	-0.10	0.06
Teach prewriting strategies	0.16	0.20	0.70	-0.02	-0.23	0.03
Teach revision techniques	0.14	0.17	0.73	-0.03	-0.24	0.02
Evaluation: Length	0.04	0.11	-0.07	0.45	-0.08	-0.04
Evaluation: Organization	-0.11	0.69	0.31	0.10	0.02	-0.09
Evaluation: Development	0.00	0.73	0.27	0.11	0.08	-0.06
Evaluation: Quality of ideas	0.26	0.53	-0.06	0.02	0.05	0.02
Evaluation: Word choice & phrasing	0.24	0.41	0.13	0.33	0.06	0.06
Evaluation: Spelling, grammar	-0.06	0.04	0.13	0.77	0.10	-0.06
Evaluation: Neatness, handwriting	0.14	0.06	-0.06	0.67	-0.00	-0.13
Evaluation: Following directions	-0.02	0.26	-0.02	0.56	-0.14	-0.03
Evaluation: Write for a special purpose	0.24	0.48	0.94	0.22	-0.21	0.05
Evaluation: Address a special reader	0.47	0.36	0.09	0.10	-0.28	-0.02
Evaluation: Risk-taking ideas	0.57	0.27	-0.07	-0.05	-0.18	0.04
Evaluation: Expressing feelings	0.40	0.49	-0.15	0.00	-0.19	-0.06
Evaluation: Clarity	0.07	0.60	0.08	0.11	-0.06	-0.01
Assessment: Teacher-made individual tests	-0.21	0.01	-0.03	-0.16	0.01	0.61
Assessment: Teacher-made group tests	0.08	-0.12	-0.06	-0.01	0.06	0.72
Assessment: Standardized tests	-0.03	0.01	0.06	-0.13	0.02	0.70
Assessment: Observe writing activity	0.10	-0.03	-0.12	-0.13	0.63	-0.09
Assessment: Listen to students read own writing	-0.08	-0.01	0.02	-0.06	0.60	0.31
Assessment: Peer evaluations	-0.18	0.02	-0.12	0.11	0.63	0.12
Assessment: Evaluate collection over time	-0.24	-0.03	-0.04	0.10	0.38	-0.18

n=760.

TABLE 3. Principal Components Analysis of Teachers' Reports of Instructional Practices: Grade 4

	Sharing a Message	Clarity	Writing Conventions	Process Strategies	Informal Assessment Techniques	Formal Assessment Techniques
Help understand topic	0.21	0.30	0.19	0.06	-0.13	0.00
Encourage extensive reading	0.43	0.09	0.18	0.14	-0.06	-0.01
Copying passages	0.22	-0.21	0.46	0.00	0.03	-0.22
Think of author's purposes	0.51	0.24	0.03	0.18	-0.09	-0.12
Consider prospective reader	0.53	0.13	-0.05	0.18	-0.07	-0.07
Provide common topic	0.29	0.26	0.12	0.16	-0.29	-0.07
Requiring outline	0.27	0.15	0.09	0.39	0.02	-0.27
Publishing students' work	0.49	-0.06	-0.09	0.29	-0.14	0.03
Talk with teacher about papers	0.36	0.14	0.06	0.34	-0.31	-0.03
Talk with peers about papers	0.43	0.02	-0.12	-0.42	-0.34	0.03
Giving multiple grades	0.25	0.11	0.22	0.32	0.01	-0.13
Correcting all errors	-0.04	0.04	0.70	0.19	0.07	-0.10
Preparing several drafts	0.04	0.07	0.22	0.70	-0.03	0.04
Teach prewriting strategies	0.19	0.27	-0.01	0.69	-0.10	-0.01
Teach revising techniques	0.17	0.23	0.02	0.73	-0.16	-0.01
Evaluation: Length	0.11	0.10	0.36	0.00	-0.05	-0.15
Evaluation: Organization	0.01	0.72	0.10	0.27	-0.07	-0.14
Evaluation: Development	0.09	0.74	0.00	0.30	-0.04	-0.10
Evaluation: Quality of ideas	0.22	0.63	-0.01	0.06	-0.02	-0.05
Evaluation: Word choice & phrasing	0.32	0.49	0.21	0.11	0.01	-0.05
Evaluation: Spelling, grammar	-0.03	0.13	0.78	0.07	-0.08	-0.05
Evaluation: Neatness, handwriting	-0.02	0.06	0.75	0.03	0.01	-0.05
Evaluation: Following directions	0.02	0.29	0.50	0.01	-0.00	-0.01
Evaluation: Write for special purpose	0.35	0.40	0.19	0.17	-0.05	-0.02
Evaluation: Address a special reader	0.63	0.21	0.15	0.11	0.02	-0.21
Evaluation: Risk-taking ideas	0.68	0.17	0.00	-0.00	-0.04	-0.05
Evaluation: Expressing feelings	0.54	0.39	0.08	-0.11	-0.06	0.11
Evaluation: Clarity	0.29	0.49	0.14	0.01	-0.11	0.04
Assessment: Teacher-made individual test	-0.10	-0.06	-0.12	-0.01	0.01	0.78
Assessment: Teacher-made group test	-0.02	-0.10	-0.14	-0.07	0.05	0.78
Assessment: Standardized tests	-0.03	-0.02	-0.11	-0.02	0.09	0.64
Assessment: Observe writing activity	0.06	-0.12	-0.03	0.02	0.72	-0.01
Assessment: Listen to students read own writing	-0.05	-0.04	-0.11	0.01	0.77	0.07
Assessment: Peer evaluations	-0.20	-0.00	0.05	-0.07	0.51	0.16
Assessment: Evaluate collection over time	-0.08	-0.02	-0.08	-0.14	0.46	-0.05

N = 943.

Table 4 clusters the various practices in terms of the emphases they reflect, and reports the percentage of students in the NAEP sample whose teachers rated each practice as "very important" in the teaching of writing.

The results suggest some interesting patterns in teachers' attitudes. The items clustered around Sharing a Message provoke considerable disagreement. At grade 11, for example, the percentage of students with teachers rating each practice as "very important" ranges from 17 percent for publishing students' work to 70 percent for encouraging extensive reading. The two practices in this set that are most clearly associated with process-oriented instruction (talking with peers about papers and publishing student work) receive particularly low ratings; the two practices likely to be part of any approach to writing instruction (encouraging extensive reading and talking with the teacher about the writing) both receive relatively widespread support. Grade level differences in this cluster of items reflect an increased concern with audience and purpose in the upper grades, and a falling off of concern with expressing feelings and publishing student work.

The cluster of items related to particular writing-process strategies (preparing several drafts, teaching prewriting strategies, and teaching revising techniques) received relatively broad support; from two-thirds to three-quarters of the students had teachers who rated each practice as "very important" in the upper grades; they were seen as somewhat less important at grade 4.

Emphasis on writing conventions, like sharing a message, varied considerably from item to item. Following directions was rated as very important in evaluating writing by the teachers of three-quarters or more of the students; almost none had teachers who placed a similar emphasis on length. Emphasis on correcting all errors (associated most closely with traditional, product-oriented approaches to instruction) was rated as very important by the teachers of 37 to 44 percent of the students, and also received somewhat more support in the upper grades.

TABLE 4. Teachers' Reports of the Importance of Specific Instructional Practices

Percent of Students whose Teachers Rate Practices as "Very Important"			
	Grade 4 (n = 917)	Grade 8 (n = 748)	Grade 11 (n = 854)
Sharing a message			
Evaluation: Risk-taking ideas	36.6	34.1	35.2
Evaluation: Expressing feelings	76.2	70.1	61.7
Evaluation: Address a specific reader	28.2	42.4	46.4
Publishing students' works	23.8	24.1	16.5
Talk with peers about papers	32.9	38.9	36.6
Talk with teachers about papers	62.0	63.6	63.4
Think of author's purposes	43.7	54.5	69.1
Consider prospective reader	23.2	36.8	41.4
Encourage extensive reading	72.5	70.4	69.9
Process strategies			
Preparing several drafts	41.8	67.5	65.4
Teach prewrite strategies	61.8	73.7	72.9
Teach revising techniques	56.6	75.8	73.3
Writing conventions			
Evaluation: Spelling, grammar	60.8	69.5	64.7
Evaluation: Neatness, handwriting	49.1	39.0	23.7
Evaluation: Following directions	75.9	77.5	79.4
Correcting all errors	37.3	42.9	44.0
Evaluation: Length	4.1	3.8	3.9
Emphasis on Clarity			
Evaluation: Development	74.9	88.0	91.1
Evaluation: Organization	80.8	91.5	93.7
Evaluation: Quality of ideas	78.4	79.2	83.4
Evaluation: Word choice & phrasing	57.5	63.6	69.9
Evaluation: Clarity	86.2	91.2	94.1
Use of Formal Assessment Techniques *			
Teacher-made test (individual)	21.4	24.3	21.9
Teacher-made test (group)	41.1	58.2	64.3
Standardized tests	44.0	33.3	24.1
Use of Informal Assessment Techniques *			
Listen to students read own writing	89.4	66.9	38.0
Peer evaluation	42.6	47.6	36.9
Observe writing activity	94.9	92.2	84.3
Evaluate collection over time	70.7	67.7	55.0

* Assessment techniques were rated on a different scale. Reported percentages are of teachers using the technique for a majority of their students.

Of all of the clusters of items, those related to traditional criteria of clear writing received the most consistent and highest ratings of importance from the teachers of the students in these samples, particularly at the upper grades. At grade 11, for example, over 90 percent of the students had teachers who rated development, organization, and clarity as "very important" in evaluating their students' writing.

The items on assessment techniques used a different scale than the other items in Table 4. Rather than ratings of degree of "importance," for these items teachers indicated the extent to which they used the technique with their students. Response choices varied from "Do not use" to "Use for all students."

Formal techniques for assessing writing skills were dominated by teacher-made group tests, increasingly so in the upper grades. Use of standardized tests of writing ability (which tend to take the form of multiple-choice assessments of grammar, spelling, and usage) were reported by the teachers of 44 percent of the fourth grade students, dropping off to 24 percent by grade 11.

In general, the most widely used informal assessment technique was observation of students while they are writing; evaluation of collections of student writing over time was also reported by the teachers of the majority of students at all three grades. The use of most of the informal techniques declined as grade level rose. Listening to students read their own writing dropped the most, from 89 percent in grade 4 to 38 percent in grade 11.

Overall, the teachers' reports on their attitudes toward these instructional practices indicate a somewhat mixed portrait of teachers' values. The most highly rated strategies, even when claimed by advocates of a particular instructional approach, in fact are a part of most instruction: they include techniques for understanding the topic, the teaching of prewriting and revision skills, and the encouragement of extensive reading. Techniques likely to be uniquely associated with a particular instructional approach show less consensus. Some 44 percent of the 11th grade students, for example, had teachers who felt it is very important to correct all errors in student work (an approach usually associated with product-oriented approaches), while

another 37 percent had teachers who felt it is very important for students to talk with their peers about their writing (a process-oriented technique).

Materials for Teaching Writing

Teachers in the NAEP sample were also asked about the types of instructional materials that they used for the teaching of writing. Results for grades 4, 8, and 11 are summarized in Table 5, which reports the percentage of students with teachers using each type of material at least weekly.

The results suggest that writing instruction draws upon a wide variety of instructional materials. Between 78 and 84 percent of the students have teachers who report using teacher-made materials regularly; 62 to 72 percent have teachers who make regular use of a textbook; 42 to 56 percent have teachers who make use of other books; 27 to 43 percent have teachers who make regular use of workbooks; and 55 to 67 percent have teachers who make regular use of student writing.

Instructional materials are for the most part only a "delivery system" that can be used effectively to implement a variety of different approaches to instruction. Hence these data tell us little about instructional emphases. The one exception to this is the use of workbooks, which usually reflect an emphasis on word and sentence level skills that can be easily adapted into workbook exercises. Use of workbooks to teach writing is heaviest at grade 4 (where 43 percent of the students have teachers who report at least weekly use), tapering off to 27 percent by grade 11--a figure which again reflects the continuation of traditional rather than process-oriented approaches in a reasonably large number of elementary classrooms.

TABLE 5. Types of Instructional Materials Used in the Teaching of Writing

	Percent of Students whose Teachers Report at Least Weekly Use		
	Grade 4 (n = 812)	Grade 8 (n = 689)	Grade 11 (n = 779)
Teacher-prepared materials	78.3	80.6	84.4
Textbooks	61.8	72.0	70.9
Students' writing	67.2	63.3	54.5
Other books	50.8	41.5	55.5
Periodicals	38.7	31.4	30.3
Workbooks	43.0	37.7	27.0
Filmstrips	16.0	11.1	11.4
Games/puzzles	23.1	15.0	9.8
Videotapes	7.6	5.5	7.7
Tapes/records	11.2	11.5	7.9
Slides/transparencies	7.8	10.4	7.3
Computer assisted	7.4	1.8	0.9

Approaches to the Teaching of Reading

At grade 4, teachers were also asked a series of questions about how frequently they used each of a series of approaches to the teaching of reading, about their assessment procedures, and about their use of various types of instructional materials. Principal components analysis with a varimax rotation was used to investigate the interrelationships among their responses to these questions. The six largest vectors accounted for 42.9 percent of the original variance. Results are summarized in Table 6.

Factor 1, Teacher Made Materials, is defined by items reflecting the use of materials other than textbooks, including teacher-prepared materials and teacher-made tests. Factor 2, Variety of Approaches, reflects an eclectic response including the use of language experience, linguistic, nonstandard orthography, programmed instruction, and sight or visual approaches. The third factor, Use of Media, includes items reflecting a variety of audio-visual materials. Factor 4, defined by the use of reading texts and workbooks and by an emphasis on instruction and practice in comprehension and decoding skills, seems to reflect use of the traditional basal reading program. Factor 5, Assessment, includes positive loadings for all of the assessment items, with particular emphasis on broad contexts of use such as discussion and listening to students read. The final factor, Phonics, reflects on emphasis on supplementary phonics or total phonics approaches, combined with frequent testing.

The percentages of students with teachers who make regular use of these various materials and approaches are summarized in Table 7. As with writing instruction, the picture that emerges is one of considerable eclecticism in approach. In general, activities associated with a basal reading program occur most frequently, with 96 percent reporting at least weekly use of a reading text, and 93 percent of a workbook. Assessment techniques, particularly listening to students read and discussing what they read, were also reported regularly. Items associated with a variety of approaches occurred somewhat less frequently, though 80 percent of

TABLE 6. Principal Components Analysis of Teachers' Reports of Instructional Practices: Grade 4 Reading

	Teacher-made Materials	Variety of Approaches	Use of Media	Basal Program	Assessment	Phonics
Teaching Approach:						
Practice comprehension skills	.25	.20	-.05	.57	-.02	-.12
Practice decoding skills	.14	.23	.06	.64	-.04	.20
Language experience	.23	.57	.05	.21	-.15	-.05
Linguistic	.12	.62	.11	.11	-.04	.05
Non-standard or orthography	-.10	.68	.10	-.16	-.07	.09
Programmed instruction	.12	.54	.00	-.05	-.02	.16
Sight or visual	.20	.47	.04	.36	-.06	.12
Supplementary phonics	.12	.31	.11	.26	.08	.55
Sustained silent reading	.39	.08	-.02	.28	-.01	.13
Total phonics	.09	.29	.08	.12	.01	.68
Instructional Material Usage:						
Non-text books	.53	.19	.20	.19	.02	-.13
Computer-assisted	.33	.07	.18	.08	.02	-.01
Games/puzzles/toys	.39	-.04	.35	.16	.04	.33
Movies/filmstrips	.10	.15	.70	.02	-.01	-.05
Periodicals	.38	.11	.48	.07	.00	-.12
Reading texts	-.01	-.04	.09	.54	-.09	-.01
Slides/transparencies	.08	-.05	.63	.06	-.03	.20
Tapes/records	.21	.03	.63	.05	-.06	.14
Teacher-prepared	.60	.05	.10	.07	-.04	.25
Non-reading texts	.57	.14	.14	.13	-.04	-.07
Videotapes	-.00	.09	.56	-.02	-.15	-.01
Workbooks	.04	-.10	.05	.62	-.02	.14
Assessing Reading: ^a						
Reading series test	.37	.19	-.06	-.30	.20	-.41
Teacher-made individual test	-.53	.02	-.07	.22	.20	-.43
Teacher-made group test	-.51	-.02	.02	.27	.33	-.32
Standardized test	.09	-.16	-.06	-.07	.43	-.14
Non-reading activities	-.24	-.12	-.11	-.07	.58	.14
Listen to students read	-.01	-.03	-.05	-.05	.77	-.00
Discuss material students read	-.00	.03	-.00	-.02	.72	-.01

n=987.

^a The scale for these items is oriented in the opposite direction as the scale for teaching approach and material usage.

TABLE 7. Percentage of Students whose Teacher Reports Using Selected Materials and Approaches Regularly:^a Grade 4

	<u>Percent</u>
Teacher-Made Materials:	
Non-text books	73.4
Teacher-prepared materials	82.7
Non-reading texts	57.1
Teacher-made individual text	28.2
Teacher-made group test	46.0
Variety of Approaches:	
Language experience	79.6
Linguistic	50.7
Non-standard orthography (e.g., i.t.a.)	13.5
Programmed instruction	47.4
Sight or visual	78.0
Use of Media:	
Movies/filmstrips	26.7
Slides/transparencies	16.2
Tapes/records	29.7
Videotapes	12.0
Basal Program:	
Instruction or practice in comprehension skills	97.8
Instruction or practice in decoding skills	94.1
Reading texts	96.2
Workbooks	93.0
Assessment:	
Standardized test	71.1
Observe non-reading activities	63.6
Listen to students read	87.0
Discuss materials students read	94.4
Phonics:	
Supplementary phonics	64.3
Total phonics	52.2

n=924

^a At least weekly.

the students had teachers who reported introducing language experiences each week, and 78 percent had teachers reporting sight or visual approaches. Regular use of teacher-made materials was also reported by the teachers of 83 percent of the students. A total phonics approach was reported at least weekly by 52 percent, and supplementary phonics by 64 percent. The various types of instructional media were reported in less frequent use; in all cases, the majority of teachers reported using them less than once a week.

The reports on frequency of use of these various approaches and materials suggest that however sharply defined the debates about effective reading instruction may be, in practice the majority of teachers draw eclectically upon a wide variety of approaches. Phonics instruction, language experience, basal readers, and trade books seem to coexist comfortably for many teachers.

Quality of Instructional Materials

Teachers were asked to evaluate the instructional materials available to them. For writing, no more than 9 percent of the students had teachers who declared they were "totally satisfied" with their materials; more optimistically, 45 to 65 percent had teachers who were "satisfied with major aspects" of the materials available (Table 8). Teachers were also asked about the degree of interest and challenge in the textbooks they used to teach writing; their responses are also summarized in Table 8. Overall the ratings for writing are quite low, with no more than 38 percent of the students having teachers who rated their writing texts as of "high" interest, and only 46 percent having teachers rating them as "challenging." Given that a high proportion of the teachers also say that they use such materials regularly, this alone raises a serious question about the quality of writing instruction American students are currently receiving. If the teachers do not find the materials interesting or challenging, can we be surprised that students report a decreasing interest in writing across the grades (Applebee, Langer, & Mullis, 1986b, p. 60)?

TABLE 8. Teachers' Reports about the Quality of Instructional Materials

	Percent of students whose teachers report			
	Grade 4 (n = 947)	<u>Writing</u> Grade 8 (n = 763)	Grade 11 (n = 881)	<u>Reading</u> Grade 4 (n=920)
Degree of satisfaction with materials:				
Totally satisfied	9.2	8.5	7.0	18.6
Satisfied with major aspects	45.1	56.9	64.9	70.1
Level of interest of text: High	14.2	37.9	25.4	47.1
Level of challenge of text: High	19.8	45.6	38.6	53.3

Ratings of reading materials at grade 4 were somewhat more encouraging (Table 8). Some 19 percent of these students had teachers who were "totally satisfied" with the materials, and 70 percent had teachers who were "satisfied with major aspects." Further, 47 percent of these students had teachers who rated the reading texts as of high interest, and 53 percent rated them as challenging. But that still leaves about half of fourth grade students using reading textbooks that their teachers do not believe are interesting or challenging.

The Relationship between Teachers' Ratings of Textbook Quality and Teachers' Autonomy in Textbook Selection

In a separate series of questions, teachers were asked about the extent to which they were involved in choosing the textbooks they were using for the teaching of writing. The results, summarized in Table 9, indicate that fewer than half of the students at any of the grade levels surveyed had teachers who were given the opportunity to select the materials that they use to teach writing. Teachers in grade 4 had the least autonomy; those in grade 11 the most.

Teachers' involvement in materials selection was related in turn to their judgments of the quality of the texts. The results are summarized in Table 10.

Not surprisingly, teachers at all three grade levels were more likely to report that the textbooks they used were "highly interesting" when they had a major say in textbook selection, as opposed to when the textbooks were a school, district, or state-level decision. Perhaps more importantly, however, they were also likely to rate the textbooks as "highly challenging" when they had a say in textbook selection.

TABLE 9. Teachers' Involvement in Materials Selection

	Percent of Students whose Teachers Report		
	Grade 4 (n = 974)	Grade 8 (n = 764)	Grade 11 (n = 876)
Selected by teacher	16.8	37.3	44.4
Selected by others	83.2	62.7	55.6

TABLE 10. Judged Quality of Writing Textbook, by Teachers' Involvement in Materials Selection

Quality of Textbook	Grade 4		Grade 8		Grade 11	
	Selected by		Selected by		Selected by	
	Teacher (n=252)	Other (n=611)	Teacher (n=159)	Other (n=298)	Teacher (n=141)	Other (n=175)
Level of interest: High	23.6	14.4	41.2	36.1	34.7	18.0
Level of challenge: High	27.8	15.0	47.7	45.4	43.2	33.8

Tests of significance	Grade 4		Grade 8		Grade 11	
	Chi-square (df = 1)	p	Chi-square (df = 1)	p	Chi-square (df = 1)	p
Level of interest	10.47	.001	1.14	.286	11.53	.001
Level of challenge	18.11	.001	.21	.088	2.91	.008

Such findings, though they involve no independent judgments of textbook quality, accord well with recent attempts to give teachers a greater say in decision making, as well as with recent criticisms of the effects of textbook selection criteria on the quality of the materials that result (see Bennett, 1988). The saddest part about the results, however, is that even when teachers select the materials themselves there is little to select from; even when the teachers do the selection, at most 48 percent of the students have writing textbooks that their teachers rate as challenging, and even fewer have materials that their teachers rate as highly interesting.

Relationships between Coursework, Teaching Experience, and Preferred Approaches to Instruction

Much of the recent attention to literacy has called for changes in inservice and preservice preparation: projects such as the National Writing Project have been widely applauded, and college and university teacher training programs have been encouraged to revise their courses to give more attention to recent theories. These emphases lead to the question of the extent to which the practices teachers prefer are related to their previous educational experience. What proportion of students have teachers who have had any formal training in techniques of reading or writing instruction? Are teachers who have had such training (in undergraduate, graduate, or inservice programs) more likely to favor process-oriented approaches than their peers who do not report such coursework?

In the NAEP sample of teachers, between half and two-thirds of the students at the three grade levels had teachers who reported at least some undergraduate coursework in writing instruction, just over 40 percent had teachers who reported some inservice work, and 23 to 36 percent had teachers who reported graduate coursework in writing instruction (Table 11). The results at grade 4, where direct instruction in reading plays a more important role in the curriculum than it does at grades 8 or 11, indicate that a higher proportion of students had teachers with specific training in reading instruction than had teachers with similar training in writing instruction.

TABLE 11. Teachers' Reports of Formal Training in the Teaching of Writing and Reading

	Percent of Students whose Teachers Report		

	Grade 4 (n = 1027)	Grade 8 (n = 790)	Grade 11 (n = 876)
<u>Writing</u>			
Undergraduate coursework	65.7	54.5	54.9
Graduate coursework	22.5	25.6	36.1
Inservice Training	44.4	41.2	43.3
 <u>Reading</u>			
Undergraduate	80.2	49.1	37.1
Graduate	55.0	39.7	30.7
Inservice	49.0	34.7	29.6

Table 12 relates years of teaching experience to the reports on writing in the grade 11 sample, and to reports on reading in the grade 4 sample. As would be expected, teachers who have been teaching longer have had more opportunity for additional training, and report correspondingly higher levels of participation in graduate and inservice programs. Results for undergraduate coursework in writing instruction are more surprising. In spite of the recent attention to writing instruction, teachers who began teaching in the past four years are not much more likely than their more experienced colleagues to have taken coursework in writing instruction as part of an undergraduate program. (Unfortunately the data available do not include information on whether teacher training took place in a graduate or undergraduate program.)

Perhaps most surprising is that 25 percent of the teachers who began teaching English within the last four years reported no training of any sort in the teaching of writing. This compares with 3 percent for the teaching of reading in the grade 4 sample.

Relationships between such training and attitudes toward a few key techniques are presented in Table 13. The results suggest a relatively strong relationship between more extensive coursework and favored practices. In general, the more levels of coursework that teachers report (undergraduate, graduate, and inservice), the more likely they are to respond favorably to techniques usually associated with process-oriented writing instruction (preparing several drafts, having students talk with peers about their papers, teaching revising techniques, and publishing students' work). Conversely, they are less likely to emphasize correcting all errors, a practice usually associated with traditional, product-oriented instruction. Many of the differences are quite substantial: the proportion of students whose teachers give a high rating to allowing students to talk with peers about their writing rises from 19 percent of those with teachers reporting no coursework to almost half of those with teachers reporting coursework at all three levels (undergraduate, graduate, and inservice).

TABLE 12. Percent of Students whose Teachers Report Training in the Teaching of Writing or Reading, by Years of Teaching Experience

	Years of Teaching Experience					
<u>Training</u>	<u>0 - 4</u> (n=130)	<u>5 - 14</u> (n=403)	<u>15 or more</u> (n=349)	<u>All</u> (n=882)	<u>Chi-square</u> (df=2)	<u>P</u>
<u>Teaching Writing: Grade 11</u>						
None	24.8	11.5	17.4	15.8	14.12	.001
At undergraduate level	55.8	56.2	53.2	55.0	0.73	.693
At graduate level	26.1	34.1	42.5	36.2	12.47	.002
In inservice program	20.9	48.1	46.5	43.5	31.63	.001
<u>Teaching Reading: Grade 4</u>						
None	2.6	3.2	2.3	2.7	0.77	.680
At undergraduate level	79.4	84.1	77.5	80.6	6.47	.039
At graduate level	29.0	54.9	62.0	55.3	38.55	.001
In inservice program	34.9	47.6	54.2	49.2	14.01	.001

TABLE 13. Percent of Students whose Teachers Report Selected Practices Are "Very Important,"
by Levels of Coursework: Grade 11

Levels of Coursework: Undergraduate, Graduate, Inservice

	None (n=135)	Any 1 (n=416)	Any 2 (n=198)	All 3 (n=119)	Chi-square (df=3)	p
Preparing several drafts	60.8	61.7	68.3	79.9	15.72	.001
Talk with peers about papers	19.1	37.1	47.9	42.9	27.84	.001
Teach revising techniques	57.6	71.5	77.8	89.2	34.57	.001
Correcting all errors	55.4	44.5	37.4	37.4	12.73	.005
Publishing students' work	13.5	18.7	12.0	21.2	6.88	.076

People seeking to change the schools sometimes look to new teachers as the most hopeful route: such teachers can be trained initially in new methods, and are more likely to carry them out than are older teachers "entrenched" in their previous ways. To explore this, we looked at the relationship between key practices in writing instruction and years of experience, and then at the effects of the interaction of experience and levels of coursework on attitudes toward use of these practices.

Table 14 summarizes the results for years of experience at grades 4 and 11. In general the results show little difference in attitudes among more and less experienced teachers at grade 11. Although the differences among the three groups are not statistically significant, allowing students to talk with peers about papers is somewhat more popular with the more experienced teachers. (This may in part be a function of their better-developed classroom management skills: having students work together is considerably more difficult to manage than are whole-class activities.) Correcting all errors, on the other hand, is significantly more popular among the less-experienced teachers.

At grade 4, the patterns are somewhat different. Here, talking with peers was more popular among the teachers with less experience, as was preparing several drafts. Correcting all errors showed little difference among groups, though was in general less popular among the teachers at grade 4 than it was at grade 11.

Table 15 brings the previous analyses together, examining attitudes toward selected practices in conjunction with experience and coursework. The pattern is very similar to that revealed by examining coursework alone: at each level of experience, teachers reporting more levels of coursework are more likely to favor the process-oriented techniques, and less likely to favor correcting all errors. The only exceptions involve the teachers with fewer than five years of experience, who continue to be less enthusiastic about publishing students' work and more enthusiastic about correcting student errors.

TABLE 14. Percent of Students whose Teachers Report Selected Practices Are "Very Important,"
by Years of Teaching Experience

	Years of Experience				
	0 - 4 (n = 125)	5 - 14 (n = 410)	15+ (n = 342)	Chi-square (df = 2)	p
<u>Grade 11</u>					
Preparing several drafts	66.0	66.4	64.0	0.53	.768
Talk with peers about papers	30.8	38.0	37.0	2.23	.328
Teach revising techniques	77.4	71.7	73.5	1.66	.435
Correcting all errors	56.1	37.7	46.7	15.29	.001
Publishing students' work	19.4	16.1	16.0	0.89	.642
<u>Grade 4</u>					
Preparing several drafts	49.8	44.2	37.4	7.09	.029
Talk with peers about papers	39.6	34.6	29.4	4.91	.086
Teach revising techniques	61.0	56.61	55.5	0.99	.609
Correcting all errors	37.5	36.7	38.1	0.19	.910
Publishing students' work	25.1	23.1	24.4	0.30	.862

TABLE 15. Percent of Students whose Teachers Report Selected Practices Are "Very Important,"
by Years of Experience and Levels of Coursework: Grade 11

Levels of Coursework: Undergraduate, Graduate, Inservice						Chi-square (df = 3)	p
	Years of Experience	None	Any 1	Any 2	All 3		
Preparing several drafts	0 - 4	77.0	55.8	73.7	(90.9)	7.13	.068
	5 - 14	59.8	61.3	71.7	83.0	10.58	.014
	15+	52.7	64.7	62.4	76.5	7.68	.053
Talk with peers about papers	0 - 4	23.3	26.1	53.5	(32.3)	7.20	.066
	5 - 14	15.7	38.6	41.3	51.9	13.96	.003
	15+	19.3	39.7	41.3	46.3	11.35	.010
Teach revising techniques	0 - 4	60.5	84.0	75.8	(90.9)	7.45	.059
	5 - 14	68.9	65.1	77.8	90.1	14.59	.052
	15+	48.1	74.6	76.9	88.4	27.48	.001
Correcting all errors	0 - 4	48.8	58.8	51.1	(81.5)	2.72	.437
	5 - 14	57.0	37.4	28.7	38.2	10.23	.017
	15+	57.7	47.8	44.1	32.5	8.19	.042
Publishing students' work	0 - 4	19.7	23.9	9.2	(14.0)	2.53	.470
	5 - 14	(8.5)	17.5	15.0	18.8	2.53	.471
	15+	13.9	17.9	9.0	23.6	5.90	.116

Number of Teachers (n > x)

	0 - 4	5 - 14	15+
25	52	18	5
45	203	98	50
59	145	77	64

() < 5% of total samples; interpret with caution.

Overall, these results suggest that more experienced teachers who have been involved in advanced coursework in writing instruction (either in a graduate program or in an inservice setting) are more likely to have attitudes reflecting the currently popular process-oriented approaches to writing instruction.

There are several cautions that must be interjected here, however: 1) These analyses are based on teachers' reports of the importance of particular techniques, and not on reports or observations of how often or how effectively such techniques are used. Previous studies have suggested there is often a large gap between the techniques teachers say they prefer and the techniques they actually use most frequently and effectively in their classrooms (Applebee, 1981; Langer & Applebee, 1987). 2) The analyses do not reveal whether the coursework led to changes in attitudes in the indicated direction, or whether teachers with such attitudes were more likely to select such coursework. Both factors may well be at work. 3) Even in the samples of teachers reporting advanced work, significant proportions show conflicting attitudes. Thus although teachers in the sample reporting the highest levels of coursework are more disposed toward process-oriented approaches than are their peers, even in this sample only 52 percent of the grade 11 students have teachers who think it is important for students to talk with one another about their writing, over a third have teachers who feel it is very important to correct all errors in student work, and only 24 percent have teachers who feel it is important to publish student work.

Taken together, such results suggest that the movement toward process-oriented instruction has left a significant percentage of reading and English language arts teachers untouched.

Relationships between Teacher and Student Reports

The description of teaching practice that has resulted from the teacher questionnaire augments previous reports based on the student data (Applebee, Langer, & Mullis, 1986a, 1986b). Although none of the items in the two sets of questionnaires were identical, there are some items included in both data sets that focus on the same or closely related topics. In this

section we will examine the degree of correspondence between teacher and student responses to these closely related items.

Teacher and Student Reports about Selected Emphases in Evaluation

The student questionnaire included a number of items that parallel teachers' reports of selected instructional practices having to do with responses to student writing. As we have seen, the teacher questionnaire asked for rankings of the "importance" of these techniques; on the student questionnaire, the questions were phrased in terms of "how frequently your teacher writes or talks to you about...." The difference in the questions complicates interpretation: differences will be due to differing perceptions of what is meant by the comments, to differences between what teachers say they value and how they actually carry out instruction, and to differential delivery of instruction to different classes or to students within the same classrooms (Allington, 1983).

We will look first at the overall profiles of emphases that emerge from student and teacher reports at grades 4, 8, and 11. Table 16 rank orders the emphases from most to least preferred, for each of the grades. It also presents the percentage of students who report a particular emphasis occurs "half or more of the time," and the percentage of students whose teachers rate a similar emphasis as "very important" in evaluating student writing.

There are both similarities and differences that emerge from the two lists. At grade 11, organization, development of ideas, and quality of ideas rank highly in both groups; and neatness and length of paper rank low. Following directions ranks somewhat higher on the teachers' list than the students', but this may be a function of the different way the questions were phrased. Teachers may insist that directions be followed, and most students are likely to do so-- and hence to get comments on following directions only when they deviate from the norm. Criteria like organization and development, on the other hand, are harder to adhere to consistently, and thus more likely to generate consistent comments.

TABLE 16. Percent of Teachers and Students Reporting Selected Emphases in Evaluation

Student Reports of Comments
Received at Least Half the Time

Teacher Reports That Criteria
Is "Very Important" in Evaluation

Grade 4

Following directions	(78.2)	Organization	(79.9)
Neatness of handwriting	(76.5)	Quality of ideas	(78.1)
Spelling, grammar	(71.9)	Following directions	(76.2)
The ideas	(71.7)	Expression of feeling	(75.3)
Wrote enough	(70.3)	Development	(74.2)
Words used	(69.0)	Word choice and phrasing	(57.2)
Way ideas explained	(67.9)	Spelling and grammar	(51.9)
Organization	(65.6)	Neatness and handwriting	(49.0)
Expression of feelings	(65.1)	Length	(3.8)

Grade 8

Spelling and grammar	(71.8)	Organization	(92.6)
The ideas	(68.1)	Development	(87.8)
Organization	(66.0)	Quality of ideas	(77.7)
Neatness and handwriting	(64.8)	Following directions	(74.6)
Way ideas explained	(64.1)	Expressing feelings	(73.0)
Following directions	(62.6)	Spelling, grammar	(67.4)
Words used	(58.5)	Word choice and phrasing	(64.6)
Wrote enough	(56.9)	Neatness and handwriting	(39.2)
Expression of feelings	(52.8)	Length	(6.0)

Grade 11

The ideas	(71.6)	Organization	(97.0)
Way ideas explained	(68.5)	Development	(91.7)
Organization	(67.9)	Quality of ideas	(85.9)
Spelling, grammar	(67.3)	Following directions	(80.0)
Word used	(59.6)	Word choice and phrasing	(74.4)
Expression of feeling	(59.5)	Spelling, grammar	(63.0)
Following directions	(49.0)	Expressing feelings	(56.7)
Wrote enough	(48.3)	Neatness and handwriting	(25.6)
Neatness and handwriting	(45.0)	Length	(2.9)

Number of students: Grade 4 > 2642

Grade 8 > 1948

Grade 11 > 1378

Number of teachers: Grade 8 > 763

Grade 11 > 873

Rankings at grade 8 show somewhat less consistency, in part because the students' ratings show less differentiation among the types of comments (they range from 53 to 72 percent, compared with 45 to 72 percent at grade 11). There is a particularly large discrepancy in attention to spelling and grammar, which the students place first in terms of frequency of comments, but the teachers rank 6th in terms of importance. Neatness also rates more highly in student reports of teacher comments than it does in teacher reports of what is most important. In both of these cases, the discrepancies may again reflect the difference between frequency of a type of comment and its importance, rather than differences in the accuracy of student and teacher reports.

Results at grade 4 continue these patterns: There is even less differentiation in the student reports (which vary only from 65 to 78 percent across the nine items), and the rank orderings for neatness and for spelling and grammar differ considerably between teachers and students (8th and 6th, respectively, for teachers, compared with 1st and 3rd for students).

Table 17 takes a different approach to the issue of the relationship between student and teacher responses. It asks whether there are differences in the percentage of students reporting a particular type of comment, in student reports from the classrooms of teachers who rated selected criteria differently. The results suggest modest but significant associations between the two sets of reports. In classrooms of teachers who report that word choice and phrasing is very important, for example, 22 percent of the students reported that the teacher commented on the words used on almost every paper, compared with only 12 percent of the students whose teachers reported that word choice was only moderately important. In these data, all of the relationships are in the expected direction, though only 6 of the 9 comparisons are statistically significant.

TABLE 17. Percent of Students' Reporting Evaluation Comments "Almost Every Time",
by Teachers' Ratings of Importance of Criteria: Grade 11

Comment/Criteria	Teachers' Rating of Importance of Criteria			Chi-square (df=2)	p
	Very Important	Moderately Important	Relatively Unimportant		
Organization	24.1	(19.0)	-	0.32	.572
Development	19.8	1.2	-	3.33	.068
Quality of ideas	23.1	16.6	-	3.55	.060
Following directions	21.3	17.5	(10.5)	3.71	.156
Word choice & phrasing	22.0	11.8	-	16.10	.001
Spelling, grammar	38.3	26.1	-	20.98	.001
Expressing feelings	15.7	13.9	(2.4)	5.80	.005
Neatness & handwriting	19.9	13.9	14.8	6.98	.031
Length	(52.8)	12.8	8.7	65.69	.001

n=1378.

() < 5% of total sample; interpret with caution.

- Category used by < 1% of sample; df for chi-square = 1

Frequency of Writing

The comparisons so far have been inconclusive because of the difference between what teachers rate as important and what they may do frequently but routinely. Another set of questions asked both teachers and students more directly about practice: in this case, about the amount of writing that students do. Teachers were asked two questions related to this issue, one dealing with how often students are asked to write, and the other asking how many hours students spend on writing each week. Students were asked a related question, about the proportion of time devoted to writing instruction in their English classes.

Different scales for these questions again complicate comparisons, but the relevant profiles are summarized for grades 4, 8, and 11 in Table 18. At grade 11, the 3 sets of reports converge to suggest that students in the majority of classrooms are spending half or more of their time on writing instruction, and that this involves at least weekly writing assignments. Some 43 percent of these students claim to spend less than half their time on writing instruction, and 38 percent have teachers who report spending an hour or less a week. At grade 8, teacher reports of hours are similar to grade 11, but a higher proportion of students report spending almost no time on writing (22 percent compared with 14 percent at grade 11). Here student reports parallel a shift in teachers' reports on the frequency of writing assignments: the proportion reporting once a month or less is 21 percent at grade 8, compared with 13 percent at grade 11. At grade 4, both teacher and student reports suggest that less time is spent on writing instruction than at the two higher grades: 55 percent of the teachers report that students spend an hour or less a week on writing, and 26 percent of the students report little or no class time devoted to writing instruction.

The major implication of these profiles is that a significantly large proportion of students are receiving very little writing instruction.

TABLE 18. Teachers' and Students' Reports of the Frequency of Writing Assignments and Amount of Time Devoted to Writing Instruction in English Class

Grade 4

Frequency of Writing Assignments:		Hours per Week Students Write:		Proportion of Class Time Devoted to Writing:	
Teacher Reports (n=1010)		Teacher Reports (n=990)		Student Reports (n=1790)	
Daily	26.7	4 or more	14.6	Most of the time	18.5
Once a week	54.6	2 - 3	30.6	Half or more	24.3
		1	42.8	Less than half	31.5
Once a month	18.7	Less than 1	12.0	Almost none	25.8

Grade 8

Frequency of Writing Assignments:		Hours per Week Students Write:		Proportion of Class Time Devoted to Writing:	
Teacher Reports (n=774)		Teacher Reports (n=773)		Student Reports (n=1894)	
Daily	25.2	4 or more	12.2	Most of the time	16.2
Once a week	53.6	2 - 3	46.4	Half or more	39.3
		1	28.8	Less than half	22.8
Once a month	21.2	Less than 1	12.6	Almost none	21.7

Grade 11

Frequency of Writing Assignments:		Hours per Week Students Write:		Proportion of Class Time Devoted to Writing:	
Teacher Reports (n=837)		Teacher Reports (n=889)		Student Reports (n=1450)	
Daily	16.9	4 or more	9.0	Most of the time	16.6
Once a week	70.0	2 - 3	52.9	Half or more	40.1
		1	28.1	Less than half	29.3
Once a month	13.0	Less than 1	10.0	Almost none	13.9

What conclusions can we draw from the attempt to use the teacher questionnaires to validate student responses? In general, there are too many differences in the items asked of the two groups to draw strong conclusions. At most we can say that the student reports seem somewhat responsive to the emphases reported by their teachers, and that the degree of correspondence may be somewhat greater between reports of actual practice (in this case, about amount of writing) than between teacher reports of attitudes and student reports of corresponding practice.

Instructional Practices and Student Writing Behaviors

Another set of questions on the student questionnaire dealt not with teaching practices but with the student's own behaviors while writing. Many of these behaviors can themselves be thought of as outcomes that specific instructional practices are designed to promote: the teaching of prewriting strategies, for example, is meant to increase the amount of thinking about a topic that students do before writing; emphasis on the preparation of multiple drafts is designed to encourage students to make changes in what they write.

Table 19 summarizes the relationships between teachers' ratings of the importance of selected instructional practices, and students' reports about related aspects of their own writing behaviors at grade 11. The results in general suggest that there is little relationship between the practices teachers favor and the writing behaviors of their students. Though discouraging, these results parallel and reinforce previously reported findings that indicated that while students' writing behaviors were related to their levels of writing achievement, teachers' attempts to teach those behaviors showed little or no relationship to achievement (Applebee, Langer, & Mullis, 1986b, p. 82). The present results, based on teachers' rather than students' reports of attitudes toward particular instructional techniques, lead to a similar conclusion. As a group, teachers who claim to emphasize process-oriented techniques do not seem to have students who make regular use of the targeted writing processes.

TABLE 19. Percent of Students Reporting They "Almost Always" Use a Particular Behavior While Writing, by Teachers' Ratings of the Importance of Selected Instructional Practices: Grade 11

Instructional Practice/ Writing Behavior	Teachers' Ratings of Practice			Chi-square (df=2)	p
	Very Important	Moderately Important	Relatively Unimportant		
Prewriting strategies/ Think before writing	68.7	72.5	(75.0)	2.21	.346
Require Outline/ Think about organization	47.8	52.2	50.5	2.37	.306
Consider readers/ Use different styles with different persons	18.0	25.1	19.5	8.58	.014
Revising techniques/ Make changes as you write	54.0	58.1	(43.5)	3.93	.140
Revising Techniques/ Make changes after writing	52.9	51.6	(43.7)	1.46	.482
Prepare several drafts/ Make changes as you write	57.3	49.5	(51.8)	7.35	.025
Prepare several drafts/ Make changes after writing	56.1	42.6	(56.7)	20.92	.001

n of students: Grade 11 > 1371

() less than 5% of the sample;
interpret with caution

The results so far have provided the necessary background to allow us to conduct a variety of further analyses relating student achievement to a variety of instructional and policy variables, controlling for family, school, and community background. These analyses will be reported in the next section.

III. Influences on Literacy

National Assessment reports on literacy have examined relationships between a variety of background factors and students' proficiency in reading and writing. These analyses have suggested a variety of relationships that are consistent with the broader professional literature: home emphasis on literacy, socioeconomic status, and race/ethnicity have all shown consistent and unsurprising relationships to average literacy levels (Applebee, Langer, & Mullis, 1985, 1986a, 1986b, 1987, 1988). More problematically, average literacy levels of students with varying exposure to selected instructional practices have also been explored, in the continuing quest to find meaningful relationships between what schools do and what students learn. These comparisons have yielded less consistent and less convincing results.

One of the major problems in NAEP explorations of the relationships between literacy achievement and other factors has been the simplicity of the analyses. With few exceptions, the reports have been limited to bivariate comparisons, ignoring the multitude of interrelated factors influencing literacy.

There are, of course, a wide variety of factors that have been shown to be related to school achievement in general, and to literacy achievement in particular. These include community support for schools, family support for literacy, individual characteristics of students (e.g., gender, race/ethnicity), exposure (or over-exposure) to mass media, and general characteristics of the school environment (Melnick, Shibles, & Gable, 1987; Shanahan & Walberg, 1985; Staver & Walberg, 1986; Thompson, 1985; Walberg & Lane, 1985). Many of these are closely tied to the socioeconomic status of the community and the family.

Another set of variables can be tied more closely to efforts to improve literacy achievement. These include school-wide programs designed to improve literacy skills (smaller class sizes, remedial programs, minimal competency programs); improvement of teacher quality (years of education; specialist degrees; personal and professional reading and writing); and differences in the nature and amount of literacy instruction in individual classrooms.

The present study was particularly concerned with this last set of variables: the

relationships between literacy achievement on the one hand, and the amount of time spent, the materials used, and the approaches taken in literacy instruction. Rather than focusing on bivariate relationships, the study examined relationships between literacy achievement and variables of interest, after allowing for the influence of other related sets of variables.

Estimating Proficiency and Attitudes

Four outcome variables were investigated: reading proficiency, writing proficiency, attitude toward reading, and attitude toward writing. As a set, these four variables provide a relatively comprehensive measure of the outcomes of literacy instruction at the three grade levels assessed (grades 4, 8, and 11).

Reading Proficiency

The NAEP reading proficiency scale was based on 228 scalable items given at one or more grades. The IRT techniques used to provide estimates of each student's achievement work well for exploring relationships among variables that were included as conditioning variables in the original estimation process. Estimates of the relationship between reading and variables not included in the estimation process, however, can be severely attenuated (see Beaton, 1987).

Because the majority of variables in which we were interested had not been included in the conditioning, an alternative approach was necessary. To estimate reading proficiency, standard scores were calculated on the basis of within-block total scores for each block of reading items in the sampling design. Since each block was given to a nationally representative sample of students, each set of standard scores could be taken as an unbiased estimate of reading proficiency that could in turn be related to the other measures available for that student. Because item difficulty varied from block to block, relationships to other variables were calculated within block, and later pooled to estimate relationships across blocks.

Writing Proficiency

A similar problem existed in estimating writing proficiency. The writing scores provided on the NAEP data tapes were calculated using an ARM (Average Response Method)

technique that provided good estimates of relationships among variables included in the conditioning process, but that could lead to severe attenuation of relationships with other variables.

Again, students' scores were aggregated and standardized within each block of writing items, and these composites were used to calculate relationships with other variables.

Estimated in this way, the correlations between reading and writing proficiency were .54 at grade 11, .60 at grade 8, and .61 at grade 4. These compare with estimates using the NAEP plausible values of .22 at grade 11 and .27 at grades 8 and 4. The attenuation in this case is obviously quite extreme.

Reading and Writing Attitudes

After a series of exploratory principal components analyses at each grade, composite variables measuring attitudes toward reading and attitudes toward writing were also calculated. These composites combined two types of variables that were closely related in the students' responses: estimates of the frequency with which individuals engaged in particular reading or writing tasks, and ratings of liking for or engagement in reading and writing. Each item was weighted equally in the composite; poles were reversed as necessary so that high scores would always reflect positive attitudes. The items included in each scale are listed in Tables 20 and 21.

Developing Indices of Factors Related to Performance

To impose some order on the large number of measures available in the database, the variables were organized into a number of blocks reflecting previous research: Community Characteristics (Block 1), Family Support for Literacy (Block 2), Student Characteristics (Block 3), Use of Media (Block 4), School Climate (Block 5), School Emphasis on Literacy (Block 6), Teacher Quality (Block 7), and Instructional Factors (Block 8).

TABLE 20. Variables Included in Composite Measure of Reading Attitudes

How often do you read for fun on your own time
How often do you tell a friend about a good book
How often do you take books out of the library
How often do you spend your own money on books
How often do you read a book based on a movie you saw
How often do you read books by an author you like
How often do you go to the public library
How often do you read a story or novel
How often do you read a poem
How often do you read a play
How often do you read a newspaper
How often do you read a magazine
How often do you read a science book
How often do you read a biography
How often do you read a how-to book
How often do you read a book about other times
How often do you read a sports book
How often do you read the words of a song
How often does someone read aloud to you
How often do you read aloud to someone
In your free time, how often do you read a book
In your free time, how often do you read a newspaper
How often do you go to the library to read on your own
How often do you go to the library to look up facts for school
How often do you go to the library to find books for hobbies
How often do you go to the library for a quiet place to read
How often do you go to the library to take out books
How often do you read a news magazine
How often do you read a newspaper (not comics or sports)
Reading helps me decide what I want to be
Reading helps me learn to fix things
Reading helps me understand people's actions
Reading is important

TABLE 21. Variables Included in Composite Measure of Writing Attitudes

Non-school related writings done last week
Amount of writing on own away from school
How often do you list things to buy
How often do you copy recipes or directions
How often do you fill out order blanks
How often do you keep a diary or journal
How often do you do a crossword puzzle
How often do you write about what you have read
How often do you write papers too personal to show
How often do you write for a school newspaper
How often do you write a letter to a relative
How often do you write notes or messages
How often do you write stories that are not for homework
In your free time, how often do you write in a diary
In your free time, how often do you write a letter
Writing is important
Writing helps learn about self
Writing reminds me about things
Writing helps me study
Writing helps me understand new ideas
I like to write
I am a good writer
I think writing is a waste of time
People like what I write
I dislike writing to be graded
I would not write if not for school
How often do you help other people with their writing
Writing helps get a good job
Writing helps share ideas
Writing helps show what you know
Writing helps keep in touch with friends

Community Characteristics. This block reflects the overall socioeconomic status of the community from which a student's school draws. It includes an estimate of the Orshansky percentile for the community as a whole, a pair of contrasts reflecting the degree of urbanicity (urban, suburban, rural), and three contrasts reflecting region (northern, southeastern, central, and western).

Family Support for Literacy. This block reflects family support for literacy. One composite variable provides an estimate of the number of different types of reading materials available in the home. A set of 3 contrasts reflects the level of parental education (less than high school, high school, post high school, unknown). Two additional composites reflect the amount of reading and the amount of writing done by other family members. Earlier analyses had shown these estimates of family reading and writing to be very closely related to student estimates of their own reading and writing activities (Applebee, Langer, & Mullis, 1986b). We expected that including them as part of this control block would attenuate the size of instructional effects later in the analyses--particularly in the analyses of attitudes--, but included them here to be conservative in our estimates of instructional effects.

Student Characteristics. This block includes gender, 3 contrasts for race/ethnicity (black, hispanic, other minority, white), and 2 contrasts for language spoken in the home (English, Spanish, other).

Use of Media. This block includes 2 contrasts reflecting student reports of amount of television watching each day (none, some, 6 or more hours).

School Climate. This block includes 2 contrasts for type of school (public, independent, parochial); school size (number of students); percent of non-English speaking students; racial balance (percent of white students/percent of white staff); instructional dollars per pupil; and a composite measure of school climate based on principals' reports of school problems.

School Support for Literacy. This block includes a variety of programs and

characteristics that reflect a commitment at the school level to improving literacy. This includes measures of the number of people available to help in reading instruction, the number available to help in writing instruction, the number of people teaching writing, provision of special school wide programs for teaching writing (e.g., inservice), the average teaching load for teachers of writing, and the use of minimum competency exams in reading and writing.

Teacher Quality. Teachers were asked about a variety of aspects of their backgrounds, training, and experience. Measures included here include years of teaching, highest degree, preparation for reading instruction in undergraduate, graduate, and inservice courses, preparation for writing instruction in undergraduate, graduate, and inservice courses, and teachers' own continuing reading of literature, nonfiction, and professional materials.

Instructional Factors

Variables in this block fall into three interrelated subsets:

Amount of time. This includes teachers' reports of the number of hours of writing instruction per week, frequency of writing instruction, and hours of reading instruction per week, and students' reports of the amount of expository writing for English, the amount of creative writing for English, time spent learning to write in English class, the number of reports and papers in the past 6 weeks, and the number of pages read for school each day.

Quality of instructional materials. Variables included here reflect teachers' evaluations of the interest of the reading materials used, the challenge offered by the reading materials used, the interest of the writing materials used, and the challenge offered by the writing materials used.

Focus of instruction. This set includes 9 composites reflecting the emphases during literacy instruction, as reported by teachers and students. The composites based on student reports reflect the degree of emphasis on: instructional support for writing, instructional

support for reading, and amount of response to student papers. (Variables included in the composites are summarized in Table 22.) The teacher composites reflect emphases on: sharing student work, process-oriented writing strategies, correct use of conventions, clarity of expression, informal assessment procedures, and traditional assessment procedures. The variables in these composites are based on the principal components analyses reported in Section II, Tables 1 through 3.

In considering the differing relationships that emerge, it is important to note that students reported directly on the instruction they received, whereas teachers reported in general on their approaches, not on a specific class or student.

Procedures for Carrying out the Regressions

The balanced incomplete blocks design used for the 1984 assessment yields unbiased estimates of relationships between pairs of variables, even though no student completes the full set of measures. In order to capitalize most fully on this design, a matrix of pairwise correlations was constructed at each of the three grade levels assessed, using all available students to estimate each correlation. Correlations of composites with one another and with other variables across blocks were calculated using matrix multiplication to estimate correlations of linear combinations.

SPSS regression procedures were used on the resulting correlation matrix at each grade. Variables were entered by block for Blocks 1 through 7. Variables in Block 8 (instruction) were entered as a block and also individually. Four separate regressions were run at each grade, one each for writing, reading, writing attitudes, and reading attitudes.

The complex sampling procedures used by NAEP produce a complicated series of design effects. After correcting for design effects using approximations reported in Beaton (1987), the effective *n*'s ranged from 571 to 16,066, with medians of 8,220 at grade 4, 12,619 at grade 8, and 9,007 at grade 11. For estimating the significance of variables entered into the regressions, 500 was chosen as a common, conservative estimate of effective sample size for all analyses.

TABLE 22. Variables Included in Composites Based on Student Reports on Instruction

Amount of Response to Student Papers

In responding to your papers, how often does the teacher talk to you about the following:

Following directions
Wrote enough
Ideas in the paper
Explanations in the paper
Feelings in the paper
Organizing the paper
Choice of words in the paper
Spelling, grammar
Neatness

Instructional Support for Writing

When writing, how often does the teacher ask you to make notes
When writing, how often does the teacher ask you to make an outline
When writing, how often does the teacher ask you to note changes
When writing, how often does the teacher ask you to talk to the teacher
When writing, how often does the teacher ask you to talk to classmates
When writing, how often does the teacher ask you to redo before grading

Instructional Support for Reading

How often with a new reading does the teacher point out hard words
How often with a new reading does the teacher preview the reading
How often with a new reading does the teacher read part aloud
How often does the teacher ask you to make lists of questions as you read
How often does the teacher tell you how to find the main idea
How often does the teacher tell you how to read faster

Overall Results of the Regression Analyses

Table 23 summarizes the results for Blocks 1 to 8 of the hierarchical regression analyses for reading and writing proficiency at each grade. Table 24 summarizes parallel data for attitudes toward reading and attitudes toward writing.

Control Variables. In Tables 23 and 24, the first five blocks represent, for our purposes, control variables that previous investigations have suggested are likely to be related to literacy proficiency. The discussion here will focus on overall results for each block; detailed results by variable are summarized in the Appendix tables. Community characteristics, primarily socioeconomic status, have a consistent relationship to proficiency, explaining between 6 and 7 percent of the variance in achievement across the 6 parallel analyses. This relationship reflects a variety of interacting and interrelated influences, including the availability of resources for schools, the quality of intellectual life in the home, and the resources available in support of education in general and literacy in particular in the community at large.

In the analyses of attitudes, however, these general community factors play little role. In the six analyses, community characteristics explain between 1 and 2 percent of the variation, and none of the relationships is significant ($p > .05$).

Family support for literacy also has a stable and independent relationship to literacy achievement, after allowing for more general community characteristics. Across the six analyses, from 8 to 18 percent of the variation in student proficiency can be attributed to home influences, including amount of reading material available, level of parental education, and amount of reading and writing in the home. These variables, in turn, are likely to be functioning as proxies for a variety of interrelated effects of income, motivational support, and resources available in the home.

The relationship between family support for literacy and attitudes toward reading and writing is even stronger, explaining between 16 and 47 percent of the variation.

TABLE 23. Change in Percent of Variance Explained for Proficiency Measures, by Block

Block	Source	Number of Variables	<u>Reading</u>			<u>Writing</u>		
			Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
Control Blocks								
1	Community	6	6.2***	6.1***	5.6***	7.2***	5.9***	5.8***
2	Family	6	18.0***	8.4***	11.1***	11.5***	12.1***	10.8***
3	Student	6	4.1***	11.4***	6.6***	11.0***	5.1***	15.3***
4	Use of media	2	1.3**	1.3*	.6	2.3***	.6	.6
5	School	7	.8	1.1	.4	2.2*	.4	1.2
Total, blocks 1-5		27	30.5***	28.2***	24.3***	34.3***	24.0***	33.8***
Instructional Blocks								
6	School emphasis	6	1.2	.8	.1	1.1	.3	.9
7	Teacher quality	11	.4	.7	.6	.7	.2	.7
8	Instruction	22	8.7***	6.0**	9.6***	8.2***	6.5**	10.2***
Total, all blocks		66	39.8***	35.7***	34.7**	44.3***	31.0***	45.7***

* $p < .05$ ** $p < .01$ *** $p < .001$

TABLE 24. Change in Percent of Variance Explained for Attitude Measures, by Block

Block	Source	Number of Variables	<u>Reading</u>			<u>Writing</u>		
			Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
Control Blocks								
1	Community	6	1.1	1.4	1.2	1.3	1.8	1.6
2	Family	6	25.8***	46.7***	19.2***	24.5***	28.9***	15.5***
3	Student	6	1.6	1.2	3.8***	3.7***	12.7***	13.7***
4	Use of media	2	.2	.1	.2	.0	2.0	.4
5	School	7	.5	.3	.7	.2	.6	.7
Total, blocks 1-5		27	29.1***	49.6***	25.2***	29.7***	44.1	31.9***
Instructional Blocks								
6	School emphasis	6	.5	.1	.4	.5	.3	.2
7	Teacher quality	11	.6	.4	.7	1.7	.3	.3
8	Instruction	22	16.9***	8.1***	16.8***	9.0***	8.8***	
Total, all blocks		66	47.1***	58.2***	43.1***	44.5***	53.8***	41.3***

* $p < .05$ ** $p < .01$ *** $p < .001$

Variables included under student characteristics include measures of gender, race/ethnicity, and language spoken in the home. These variables are also significantly related to proficiency in all six analyses, although the size of the relationship (after allowing for community characteristics and family support) varies from 4 to 15 percent. The data for grade 8 are somewhat anomalous for both writing and reading, but in opposite directions: for reading proficiency, the relationship is stronger at grade 8 than at grades 4 or 11; for writing proficiency, the relationship is weaker at grade 8 than at grades 4 and 11.

In the attitudes analyses, student characteristics are similarly significant and variable. For reading, they explain only from 1 to 4 percent of the variation in attitudes, a proportion that is significant only at grade 11. For writing, however, student characteristics explain from 4 to 14 percent, becoming particularly influential in grades 8 and 11.

Use of media, in this case television, shows some relationship to proficiency at the two lower grades, though the independent contribution to the variance is quite low. The low relationships may reflect the fact that amount of television viewing is related to a number of variables that have appeared in earlier blocks, including socioeconomic status and race/ethnicity. Indeed, the zero-order correlations between excessive television viewing and proficiency are all significant, ranging between .13 and .25 (see Appendix tables).

After allowing for the influence of community, family, and student variables, use of media has no significant relationship to attitudes toward reading or writing.

School characteristics, including measures of type of school, size, per pupil expenditure, racial balance, and instructional climate, show weak relationships to achievement after allowing for the variables in Blocks 1 to 4. The 7 variables explain from .4 to 2.2 percent of the remaining variation; and the relationship is significant ($p < .05$) for only one of the six independent analyses.

School characteristics do not account for a significant proportion of the variation in attitudes in any of the six analyses.

Overall, the five control blocks lead to multiple R^2 s of from .49 to .58 in the

proficiency analyses, representing from 24 to 34 percent of the variance (mean = 29.2). For attitudes, however, the multiple R^2 s are larger, ranging from .50 to .70, representing from 25 to 50 percent of the variation in attitudes (mean = 34.9).

School Emphasis on Literacy Instruction. The variables in Block 6 reflect a variety of school-wide changes that can be introduced in support of literacy instruction, including minimum competency testing, smaller class sizes, and the involvement of additional personnel in reading or writing instruction. After allowing for the variety of effects included in Blocks 1 through 5, however, these factors had no significant relationship to either achievement or proficiency.

Teacher Quality. The variables in Block 7 reflect a variety of general and specific measures of the quality of the teachers providing literacy instruction. These include measures of teaching experience, amount of education, coursework at undergraduate, graduate, and inservice levels, and ongoing personal reading of various types. Like school-wide emphasis on literacy, however, the measures included in teacher quality do not make a significant contribution to any of the analyses of proficiency or attitudes.

Instructional Factors. The variables in Block 8 were of primary concern to this study. They include measures of instructional time, of the quality of instructional materials, and of the specific emphases adopted in literacy instruction at each grade.

This set of variables was significantly related to proficiency in each of the analyses, explaining from 6 to 10 percent of the variation (mean = 8.2).

Relationships between instructional factors and the attitude measures were even stronger than those with proficiency, ranging from 8 to 17 percent of the explained variation (mean = 12.0).

In general, then, these analyses suggest 1) that instructional choices are related in significant ways to literacy achievement even after allowing for a variety of interrelated background factors; and 2) that instructional influences are larger on attitudes than they are on

proficiency.

The total variation explained ranges from 31 to 46 percent (mean = 38.5) for the proficiency analyses, and from 41 to 58 percent (mean = 48.0) for the attitude analyses.

The Influence of Specific Instructional Factors

To explore the contribution of instructional variables further, the independent contributions of the three subsets of instructional variables (instructional time, instructional materials, and focus of instruction) were also examined. Instructional time and focus of instruction showed significant relationships to proficiency and attitudes across analyses; instructional materials did not. Therefore the analyses summarized here focus only on instructional time and focus of instruction. The results for instructional materials are included in the Appendix tables.

Although conceptually distinct, in practice many of the variables included in these two sets are likely to vary together. As new approaches are introduced in reading or writing instruction, the amount of time, as reflected in measures of homework, writing assignments, and pages read are likely to go up. Since estimates of the combined influence of these variables are available from the overall analyses, the relationships of individual instructional variables to achievement and attitudes were examined independently.

Instructional Time Devoted to Literacy

Tables 25 through 28 summarize the relationships between various measures of amount of instructional time, measures of literacy proficiency, and attitudes toward literacy. For each variable, the tables give the zero-order correlation at each grade, and the standardized beta reflecting the strength of the relationship after allowing for the influence of Blocks 1-7.

The amount of homework shows a significant relationship to proficiency in both reading and writing at grade 11 ($p < .001$), but is not significantly related at grades 4 or 8 (Tables 25 and 26).

TABLE 25. Relationships Between Instructional Time and Reading Proficiency, After Blocks 1-7

	<u>Zero-Order Correlations</u> ^a			<u>Beta to Enter, After Blocks 1-7</u>		
	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
Homework	.00	.11*	.23***	-.01	.03	.18***
Amount of writing						
Expository	-.13**	-.02	-.10*	-.06	-.00	-.07
Creative	-.22***	-.11*	-.21***	-.13***	-.06	-.15***
Writing time (student reports)						
Time learning to write	-.23***	.05	-.06	-.08	.04	-.04
Number of reports and papers	.10*	.05	-.05	.03	.08	-.05
Writing time (teacher reports)						
Hours of instruction per week	-.05	-.02	.00	.01	-.02	.03
Frequency of assignments in English	.02	.06	-.01	.03	.04	-.03
Reading time						
Hours of reading instruction per week	.06	-.09*	-.12**	-.00	-.06	-.06
Pages read for school	-.09*	-.12**	-.21***	-.01	-.10	-.13***

^a Signs reflected so that scales all run from low to high.

* $p < .05$

** $p < .01$

*** $p < .001$

TABLE 26: Relationships Between Instructional Time and Writing Proficiency, After Blocks 1-7

	<u>Zero-Order Correlations</u> ^a			<u>Beta to Enter, After Blocks 1-7</u>		
	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
Homework	.01	.13**	.30***	.00	.06	.27***
Amount of Writing						
Expository	-.10	-.08	-.06	-.07	-.08*	-.02
Creative	-.20***	-.17***	-.22***	-.13***	-.16***	-.14***
Writing time (student reports)						
Time learning to write	-.04	-.01	-.01	.06	-.04	.03
Number of reports and papers	.06	-.01	-.04	.01	-.03	-.04
Writing time (teacher reports)						
Hours of instruction per week	.02	-.02	-.01	.06	.01	.01
Frequency of assignments in English	.06	.03	-.08	.05	.04	-.05
Reading time						
Hours of reading instruction per week	-.04	-.07	-.08	.01	-.02	-.00
Pages read for school	-.12**	-.12**	-.23***	-.11	-.06	-.17***

^a Signs reflected so that scales all run from low to high

* $p < .01$
 ** $p < .05$
 *** $p < .001$

Pages read for school shows a similar sort of relationship, with betas ranging from .06 to .17 across reading and writing and across grades. Again, the relationship is strongest at grade 11 for both reading and writing, though the relationship with reading proficiency is also significant at grade 8, and that with writing at grade 4.

The other variables in Tables 25 and 26 show a somewhat different instructional pattern. The numbers of expository and creative assignments completed each week are negatively related to reading and writing proficiency across all 3 grades, with creative writing assignments showing the most consistent pattern of significant relationships. In this case, it appears that the weaker students are doing more separate assignments, particularly creative writing assignments, than are the stronger ones.

There are no other significant relationship between instructional time and achievement in the data summarized in Tables 25 and 26.

The direction of the significant relationships indicates that higher achieving students tend to do more reading for school and to do more homework than do lower achieving students. Lower achieving students, on the other hand, may be asked to complete more separate (perhaps shorter) pieces of writing, particularly creative writing (primarily stories).

The relationships between instructional time and attitudes towards literacy are even stronger, and show an unexpectedly different pattern (Tables 27 and 28). Homework and pages read for school are significantly related to both reading and writing attitudes at grade 11, but the relationships are negative: the more homework and the more reading for school that the students report, the more negative their attitudes toward reading and writing, particularly so by grade 11.

The amount of writing students do, as reflected in the number of expository and creative assignments and in the time learning to write, shows a similar negative relationship at all three grades.

TABLE 27. Relationships Between Instructional Time and Reading Attitudes, After Blocks 1-7

	<u>Zero-Order Correlations</u> ^a			<u>Beta to Enter, After Blocks 1-7</u>		
	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
Homework	-.04	-.21***	-.31***	-.00	-.09**	-.20***
Amount of Writing						
Expository	-.17***	-.14**	-.20***	-.10*	-.06	-.11***
Creative	-.16***	-.10	-.14**	-.09*	-.01	-.09*
Writing time (student reports)						
Time learning to write	-.24***	-.18***	-.22***	-.23***	-.07*	-.17***
Number of reports and papers	-.00	-.03	.00			
Writing time (teacher reports)						
Hours of instruction per week	-.00	-.02	-.07	.07	-.00	-.06
Frequency of assignments in English	-.03	-.02	-.03	-.00	.04	-.04
Reading time						
Hours of reading instruction per week	-.02	-.00	-.00	.00	-.00	.03
Pages read for school	.11**	.18***	.29***	.09*	.04	.22***

^a Signs reflected so that scales run from low to high.

* p < .01
 ** p < .05
 *** p < .001

TABLE 28. Relationships Between Instructional Time and Writing Attitudes, After Blocks 1-7

	<u>Zero-Order Correlations</u> ^a			<u>Beta to Enter After Blocks 1-7</u>		
	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
Homework	-.03	-.02	-.26***	.02	-.09*	-.12**
Amount of Writing						
Expository	-.16***	-.17***	-.17***	-.07	-.10**	-.10**
Creative	-.18***	.13**	-.11*	-.10*	-.06	-.07
Writing time (student reports)						
Time learning to write	-.18***	-.25***	-.24***	-.12**	-.15***	-.17***
Number of reports and papers	-.00	-.07	-.01	-.07	-.00	.05
Writing time (teacher reports)						
Hours of instruction per week	-.02	-.06	-.03	.07	-.05	-.02
Frequency of assignments in English	-.01	-.03	.00	-.03	-.06	-.00
Reading time						
Hours of reading instruction per week	-.03	-.03	-.01	-.00	.00	.00
Pages read for school	.09*	.13**	.23***	.07	.02	.15***

^a Signs reflected so that scales run from low to high.

* $p < .01$
 ** $p < .05$
 *** $p < .001$

Focus of Instruction

Tables 29 through 32 summarize a similar set of relationships between literacy proficiency, attitudes, and a variety of composites reflecting specific emphases in literacy instruction. One set of composites is derived from students' reports about the instruction they have received; a second set is derived from teachers' reports about their emphases in general.

The relationships between focus of instruction and proficiency are summarized in Tables 29 and 30. Reports of instructional support for writing show a significant relationship to reading proficiency only at grade 4 ($\beta = .13$), and no relationship to writing proficiency. Amount of response to student writing shows significant relationships to reading proficiency at grades 4 and 11, and to writing proficiency at grades 4 and 8. Instructional support for reading shows a significant relationship to reading proficiency at all three grades, and a significant relationship to writing proficiency at grade 8.

Teacher-reported emphases are unrelated to proficiency in any of the analyses.

Tables 31 and 32 summarize parallel analyses of the relationships between instructional emphases and attitudes toward reading and writing. In these analyses, strong and significant relationships are evident between instruction and attitudes at all three grades.

Some patterns are also evident within these significant relationships. For 5 of the 6 analyses, the measures of instructional support for reading and for writing show somewhat stronger relationships to attitudes than does amount of response to student papers. The relationships also tend to be somewhat stronger in grade 4, and somewhat weaker in grade 11.

Again, teacher reports on their instructional emphases had no significant relationship to their students' attitudes in any of the analyses.

These analyses indicate significant relationships between the instruction students receive and their proficiency in reading and writing, as well as between emphases in instruction and their attitudes toward literacy. Overall, however, the specific emphases in instruction are much more strongly related to student attitudes than they are to student proficiency.

TABLE 29. Relationships Between Focus of Instruction and Reading Proficiency, After Blocks 1-7

	<u>Zero-Order Correlations</u>			<u>Beta to Enter, After Blocks 1-7</u>		
	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
Student reports						
Writing support	.24***	-.05	-.07	.13**	-.02	-.04
Response	.29***	.01	.15***	.21***	-.06	.12**
Reading support	.15***	.13**	.17***	.11**	.11**	.11**
Teacher reports						
Sharing a message	-.02	-.04	-.04	-.05	-.08	-.03
Process instruction	.01	-.06	-.03	.01	-.02	-.01
Conventions	.05	.05	.03	-.00	.05	-.01
Clarity	-.07	-.06	-.12**	-.04	-.05	-.06
Process assessment	.05	.10*	-.02	.01	.05	.02
Traditional assessment	-.03	-.00	-.05	.02	.03	.00

* $p < .05$
 ** $p < .01$
 *** $p < .001$

TABLE 30. Relationships Between Focus of Instruction and Writing Proficiency, After Blocks 1-7

	<u>Zero-Order Correlations</u>			<u>Beta to Enter After Blocks 1-7</u>		
	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
Student reports						
Writing support	.12**	.00	-.07	.03	.05	-.03
Response	.24***	.17***	.06	.19***	.13**	.03
Reading support	.12**	.15***	.03	.05	.15***	-.04
Teacher reports						
Sharing a message	-.07	-.02	-.02	-.06	-.06	.02
Process instruction	-.00	-.06	-.05	.06	-.04	-.02
Conventions	.02	-.00	.05	-.03	-.01	-.04
Clarity	-.07	-.04	-.11*	-.04	-.04	-.04
Process assessment	.11*	.06	.01	.07	.03	.03
Traditional assessment	.03	-.05	-.04	.07	-.04	.00

* $p < .01$ ** $p < .05$ *** $p < .001$

TABLE 31. Relationships Between Focus of Instruction and Reading Attitudes, After Blocks 1-7

	<u>Zero-Order Correlations</u>			<u>Beta to Enter, After Blocks 1-7</u>		
	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
Student reports						
Writing support	.44***	.39***	.33***	.35***	.23***	.25***
Response	.35***	.17***	.20***	.26***	.13***	.18***
Reading support	.41***	.38***	.29***	.25***	.23***	.24***
Teacher reports						
Sharing a message	.03	.04	.07	.02	.02	.06
Process instruction	.01	.01	.04	-.02	-.00	.05
Conventions	.03	.02	-.01	.02	-.00	-.01
Clarity	.02	-.00	.08	.00	-.00	.06
Process assessment	-.02	-.03	-.03	-.03	-.01	-.02
Traditional assessment	-.03	-.03	-.01	.00	.00	.00

* $p < .01$ ** $p < .05$ *** $p < .001$

TABLE 32. Relationships Between Focus of Instruction and Writing Attitudes, After Blocks 1-7

	<u>Zero-Order Correlations</u>			<u>Beta to Enter, After Blocks 1-7</u>		
	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
Student reports						
Writing support	.36***	.31***	.29***	.21***	.18***	.19***
Response	.39***	.18***	.11*	.28***	.12***	.08*
Reading support	.41***	.37***	.21***	.23***	.25***	.14***
Teacher reports						
Sharing a message	.07	.05	.04	.05	-.00	.03
Process instruction	.03	.00	-.01	-.00	-.00	-.02
Conventions	.05	-.01	-.02	-.04	-.03	-.02
Clarity	.05	.02	.03	.04	.00	.01
Process assessment	-.04	-.04	-.03	-.08	-.03	-.01
Traditional assessment	-.01	.00	.00	.03	.03	.02

* $p < .01$
 ** $p < .05$
 *** $p < .001$

IV. Conclusions

We began this report with three issues to address: What do the school and teacher reports reveal about current patterns of instruction? How well do these results agree with earlier findings based solely on student reports? What relationships exist between student outcomes on the one hand and instructional practices on the other, after allowing for the effects of important related factors such as socioeconomic status? This final section will summarize our findings relevant to each of these issues, and will add some additional comments about use of the NAEP database for analyses such as these.

Current Practice

The teachers' reports on instructional practice suggest that in both reading and writing instruction, teachers seem to have effected a compromise between educational practices that are treated in the pedagogical literature as incompatible. In reading, phonics instruction, language experiences, basal readers, and trade books coexist in the same classrooms. In writing, an emphasis on process strategies coexists with correction of all errors. Such compromises have a long history, producing an eclectic curriculum that may or may not be an effective one (for a broader perspective on these compromises, see Langer and Allington, in press).

The fate of recent attempts to reform instruction seems directly tied to these compromises. While a significant proportion of teachers are favorably disposed toward some practices associated with process-oriented writing instruction, an equally significant proportion remain untouched by recent reform movements. Rather than wholesale acceptance or rejection of process-oriented techniques, there seems to have been a more selective response, with certain practices being embraced by most teachers (e.g., use of prewriting strategies, teaching of revision techniques) while others are seen as important by relatively small numbers (e.g., publishing student work, asking students to talk with their peers about their writing). What may be happening is an assimilation of some of the easier-to-implement techniques and

activities associated with process-oriented approaches, without an acceptance (or perhaps understanding) of the underlying philosophy. Such an acceptance of activities in the absence of philosophy may, in the long run, lead to minor changes in the surface curriculum without real changes in the nature of student learning (see Applebee, 1986; Langer & Applebee, 1987).

Preparation of teachers in approaches to reading and writing instruction continues to show significant differences. While elementary school teachers for the most part reported relevant coursework in the teaching of reading, significant numbers of English language arts teachers are entering their first years of teaching without any formal training in the teaching of writing. Those that have had training in the teaching of writing (at undergraduate, graduate, or inservice levels) are more likely than their peers to respond favorably to process-oriented techniques. This relationship between training and attitude toward particular techniques holds across groups of teachers with widely differing levels of teaching experience. Rather than being entrenched in familiar patterns of teaching, more experienced teachers are just as likely as their younger peers to embrace new approaches-- and perhaps more likely to value techniques such as peer discussion, which can introduce management problems that less-experienced teachers may not be able to handle as comfortably.

These findings about the influence of teacher training programs highlight the important role that such programs can play throughout a teacher's professional life. Although complaints about the disjunction between teacher training and classroom practice are endemic, the relationships observed here suggest that teaching practice may be more related to inservice and preservice experiences than is sometimes supposed. Such findings accord well with recent discussions of the importance of subject-specific pedagogical knowledge in English and other subjects (e.g., Grossman, 1988).

Teachers' judgments of the quality of the materials they use suggest a major problem: no more than half of the teachers rated the materials they used to teach reading or writing as either "interesting" or "challenging" for their students. Even when they had selected the materials themselves, the majority of teachers felt the textbooks they used were neither highly interesting

nor highly challenging for their students; judgments were even worse for materials that were selected by others (at school, district, or state levels). Such findings may provide further evidence in support of attempts to loosen the criteria that govern textbook selection, allowing teachers more professional autonomy in the instructional materials they select. The current system of all-or-nothing adoptions may aggravate the tendency for publishers to produce materials that offer something for teachers of every philosophy, and as a result leaving no one particularly happy with the result.

Relationships between Student and Teacher Reports

Direct comparisons between student and teacher reports on instruction in the 1984 assessment were complicated by a number of factors. Questions were worded differently in the two sets of questionnaires, and the scales used to record responses also differed. Teachers, for example, were often asked to indicate the "importance" of a particular technique, whereas students were asked to estimate its frequency. Perhaps even more significantly, teachers reported on their instruction in general, whereas students reported on their individual classroom experiences.

Given these differences, one would not expect the direct correlation between the responses of particular students and those of their particular reading/language arts teachers to be high. One would expect, however, that if the two sets of responses have any validity, a similar portrait of current practice would emerge across students and teachers.

And that is in fact what happens: The overall portrait of instruction that emerges from the analyses of the teacher report data is very similar to that that emerges from the student data. Both sets of data suggest, for example, that a significantly large proportion of students are receiving very little writing instruction. Both sets of data also suggest that teachers at grade 11 place considerable emphasis on organization, development of ideas, and quality of ideas in responding to student writing, and relatively less emphasis on neatness and length of paper. These correspondences provide some reassurance in conclusions that are drawn from one or another data set, but the overlap in the questions is not extensive enough to allow a

comprehensive investigation of the issues involved.

Another set of comparisons related teachers' reports of their emphasis on techniques to foster process-related writing strategies, and student reports of their use of those strategies. These comparisons showed little relationship between the two sets of items. This lack of relationship parallels results from analyses of student reports, which indicated that while students' writing behaviors were related to their levels of writing achievement, teachers' attempts to teach process-related behaviors showed little or no relationship to achievement.

Differences as well as similarities that emerged between teacher and student reports suggest the need to utilize both sources of information in reaching conclusions about current practice. Self-reports of both students and teachers are open to a variety of kinds of distortion, and provide a much-needed cross-check upon each other.

Relationships between Student Outcome Measures and Instructional Practice

One of the major goals of the present set of analyses was to examine the effects of instruction after allowing for a wide variety of other variables that are usually considered to be related to proficiency. These relationships were investigated using a series of hierarchical regression analyses predicting reading and writing attitudes and proficiency at each grade: 12 analyses in all, each with 66 predictor variables.

A number of interesting results emerged from these analyses. Overall, a higher proportion of the variance in student attitudes than of student proficiency was predicted by the independent variables. The average percent of variance explained was 48.0 percent for attitudes, compared with 38.5 for proficiency. Particularly interesting was the fact that attitudes toward literacy were more closely related to instructional emphases than were proficiency scores (explaining on average 12 percent of the variance in attitudes compared with 8 percent for proficiency). This occurred in spite of the fact that both sets of regressions included parent attitudes toward literacy as a part of Family Support for Literacy. (We had expected that the close relationship between student reports on their own and their parents' attitudes would attenuate the effects of the variables remaining after parents' attitudes were entered into the

equation as part of Block 2, Family Support.)

In the various sets of variables that were included as controls, Family Support for Literacy emerged as the single most important block of predictors across the various analyses, followed closely by Student Characteristics. Community Characteristics also contributed considerably in the analyses of proficiency, though much less so in the analyses of attitudes. All three of these sets of variables probably reflect a complex interaction of social and economic factors including general attitudes toward education, specific attitudes toward literacy activities, and resources and opportunities available to the students in their homes and communities as they are growing up.

The results for students' Use of Media highlight the importance of considering interrelationships among related variables in estimating relationships to achievement. NAEP analyses have consistently shown negative relationships between hours of television watching and student proficiency across subject areas. These are usually discussed in terms of a displacement hypothesis, to the effect that students who spend time watching television are not spending time on more worthwhile endeavors.

The results from the present analysis, however, are much more equivocal. Amount of television watching is closely related to a variety of social and economic variables, and when the influence of those other variables is taken into account, the remaining relationships with television viewing are greatly reduced.

A similar phenomenon was apparent in the analyses involving the block of School Climate variables. This block includes a variety of factors that have been related to proficiency, including school size, school problems, and type of school (public, private). Again, these variable are as a set closely related to broader social and economic factors, and their independent contribution after allowing for other factors is quite small.

Of the three blocks of variables most directly related to literacy programs (School Emphasis on Literacy, Teacher Quality, and Instructional Factors), only the last showed consistent relationships to either proficiency or attitudes. In this case, however, the lack of relationships for School Emphasis on Literacy and Teacher Quality does not seem to be a

function of shared variation with broader social and economic factors. Indeed, the zero-order correlations for the various indices included in these blocks are also for the most part insignificant (see Appendix tables). A more likely explanation of the lack of relationships for these blocks of variables is that the underlying indices are simply too gross and too distant from the experiences of individual students to yield useful information. Differences in teacher quality, for example, are not likely to be adequately captured by measures such as the highest degree obtained or the amount of reading reported; but neither are easily apparent substitutes available that could be collected with self-report data. Similarly, gross reports on the number of staff available to teach reading or writing, or on special school-wide programs, are likely to mask differences in quality of programs as well as in the needs they are designed to address.

For our purposes, the final block of variables (Focus of Instruction) is the most interesting, for it includes the measures that are closest to the classroom. It is also the block of school-related variables that showed the strongest relationships to both proficiency and attitudes.

Of the instructional variables, those related to the amount of homework, the amount of reading for school, instructional support for reading, and amount of response to student writing show the strongest relationships to proficiency. Instructional support for writing shows no significant relationship to writing proficiency, though it was positively related to reading proficiency at grade 4.

There were stronger relationships between the focus of instruction and literacy-related attitudes: instructional support for reading, instructional support for writing, and amount of response to student writing were all related to reading and writing attitudes at each of the grades.

It is noteworthy that throughout the analyses of instructional effects, teacher reports on instruction show no significant relationships to proficiency or achievement; all of the significant relationships in Blocks 6, 7, and 8 involve indices derived from the student questionnaires. The lack of relationships between teacher reports and student achievement may be in part a function of the generality of the teacher questions, which focused on each

teacher's overall approach rather than on how that approach might be carried out in a particular classroom. It may also be in part a function of the kinds of within-classroom differences in instructional experiences that Allington (1983) has reported. The student reports reflect each student's experience of school, and those experiences are related in consistent ways to attitudes and proficiency.

One other aspect of these results is worth highlighting: That is the closer relationship between the focus of instruction and student attitudes than between the focus of instruction and student proficiency. (This difference occurred whether or not the measure of home literacy activities was included in the control blocks.) There are several possible explanations for this difference, and each is worth serious consideration. One is simply that the attitude data are faulty, and that the relationship is an artifact of an overriding "compliance" factor that leads some students to give accepted responses across a wide range of self-report items. Although response biases of various sorts are quite likely in these data, the large number of other self-report variables (including reports on home literacy activities) entered earlier in the regressions makes such a bias less likely as a source of the differences in Block 8.

Another explanation is that the attitude measures may be more sensitive to recent changes in instructional approaches than are the proficiency measures. This interpretation would be a hopeful one, suggesting that relationships between instructional practices and attitudes toward literacy would be harbingers of later improvements in proficiency, which tend to occur with glacial slowness.

The last explanation would assume that the differences are real: that the approaches teachers are emphasizing are having a clear effect on student attitudes, but are not leading to differences in achievement. This interpretation is a troubling one, for it suggests that there may be fundamental problems in the ways in which reforms in instruction are currently implemented. Unfortunately, however, this interpretation also accords well with other studies that have suggested that process-oriented reforms are easily subverted by older paradigms of instruction, turning into a new set of classroom activities divorced from the purposes they were originally intended to serve (Applebee, 1986; Langer & Applebee, 1987).

The NAEP data do not allow a choice among these alternatives, but they do highlight the need for careful and continuing study of the effectiveness of current reform efforts.

Using the NAEP Database

The NAEP data tapes from successive assessments offer a rich and complex universe for the exploration of a variety of issues of policy and practice. They require a large up-front investment in time and energy to use, but the possibilities they offer make that investment worthwhile.

One of the strengths of the database is the breadth of the material that it contains, both for examining proficiency and for exploring related characteristics at the school, teacher, or student level. The breadth is obtained, however, at the expense of simplicity: the matrix sampling that allows for a greater range of measures also creates a variety of problems of missing data that must be addressed. Because the concerns in secondary analyses are likely to be quite different than those addressed in the initial reports on any assessment, we need to build a collective body of experience of alternative ways of dealing with the problems that arise.

The strategy adopted in the regressions reported here is considerably simpler than the procedures adopted by NAEP in the initial analyses, since it does not require precise estimates of individual achievement on a common scale. It builds instead on the fact that each block of items is itself administered to a nationally representative random sample of students. By the same token, it sacrifices the ability to examine residuals and outliers, as well as to explore subgroup differences in mean performance. For our purposes the tradeoff seemed reasonable, and computationally feasible; the alternatives, particularly given the problems of attenuation arising with use of the NAEP proficiency estimates, did not.

If NAEP wants to encourage secondary analyses of the data, there are several changes that might make the tapes more accessible to the user. One would be to adopt a consistent system for labelling variables across age/grade samples. In the 1984 data, there are a number of variables that are present at all three levels, but with different identification numbers. These

easily get lost, or misidentified, when parallel analyses are being run across datasets, complicating the problem of debugging the analyses.

Another helpful change would be to include within-block estimates of proficiency that could be used for within-grade analyses, without conditioning on other variables. Although later assessments have increased the number of conditioning variables, it seems unlikely that the proficiency estimates prepared by NAEP will ever be conditioned on all of the variables likely to be of interest to any secondary analyst. It is possible to work around this problem, as we did in the present analysis, but by the time the severity of the problem was apparent, the time and costs to circumvent it were discouragingly high.

A related suggestion concerns composites used by NAEP in analyzing and reporting assessment results. In the 1984 analyses, a number of composites were constructed from the background data, and used in analyses of relationship to achievement. It would greatly simplify comparisons across studies if these composites were available on the tapes, rather than having to be estimated separately by each follow-up study-- particularly since calculation of the composites often requires complicated procedures for dealing with missing values.

The final suggestion concerns the teacher data files. As currently formatted, the teacher data are accurate only when used in conjunction with the student files. In that configuration, it is possible to speak with precision about "the percentage of students who have teachers who...." Since the teacher sample is derivative of the student sample, it is not possible (in any configuration) to make accurate population estimates for teachers nationally. The teacher data file would be considerably more useful if aggregate weights were calculated for each teacher (based on the summed weights of associated students on the combined teacher/student file), and made a part of the separate teacher file. (As with the student file, separate weights would be necessary for grade level and age level estimates.) This file could then be analyzed on its own (particularly useful since it is small enough to be downloaded to many microcomputers) with appropriate weightings. Although we used downloaded versions of the teacher file for exploratory analyses in the present study, the ones of interest had to be rerun on the mainframe using the combined teacher/student data in order to get accurate estimates for this report.

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Appendix Tables

1. Zero-order Correlations and Betas-to-Enter for Variables Included in Regressions on Reading Proficiency
2. Zero-order Correlations and Betas-to-Enter for Variables Included in Regressions on Writing Proficiency
3. Zero-order Correlations and Betas-to-Enter for Variables Included in Regressions on Reading Attitudes
4. Zero-order Correlations and Betas-to-Enter for Variables Included in Regressions on Writing Attitudes

Appendix Table 1. Zero-Order Correlations and Betas-to-Enter for Variables Included in Regressions on Reading Proficiency

	Zero-Order Correlation			Betas-to-Enter, After Previous Blocks		
	Grade 4	Grade 8	Grade 11	Grade 6	Grade 8	Grade 11
Block 1						
Region 1 (northeast)	.06	.04	.02			
Region 2 (southeast)	-.07	-.01	-.02			
Region 4 (west)	-.04	-.04	-.03			
Urban 1 (urban)	-.07	-.07	-.05			
3 (Rural)	-.04	-.03	-.04			
Orshansky Percentile	-.23***	-.22***	-.21***			
Block 2						
Parent Education 1 (less than h.s.)	-.11*	-.15***	-.19***	-.08	-.11*	-.14**
2 (high school)	.02	-.07	-.16***	-.00	-.06	-.15***
4 (unknown)	-.17***	-.16***	-.16***	-.17***	-.13**	-.14**
Reading material in the home	-.27***	-.25***	-.25***	-.27***	-.21***	-.21***
Family reading activities				-.26***	-.11**	-.16***
Family writing activities				.15***	.02	-.07
Block 3						
Gender (female)	.06	.28***	.12**	.08*	.29***	.13**
Race 2 (black)	-.26***	-.24***	-.27***	-.17***	-.18***	-.22***
Race 3 (hispanic)	-.16***	-.12**	-.14**	-.04	-.02	-.02
Race 4 (other minority)	.04	.03	-.03	.05	.02	-.01
Language in the home 2 (spanish)	-.15***	-.09*	-.14**	-.05	.01	-.05
Language in the home 3 (other non English)	-.06	-.04	-.07	.00	-.02	-.04
Block 4						
No TV	.02	.01	.06	-.00	.00	.02
Excessive TV (6+hours)	-.21***	-.18***	-.14**	-.12**	-.11**	-.08
Block 5						
School type 2 (private)	.07	.09*	.10*	.00	.03	.04
School type 3 (Catholic)	.06	.11*	.08	.02	.03	.02
Enrollment	-.13	-.04	-.03	-.06	-.04	-.00
Racial balance	.02	.08	.08	-.02	.01	.01
School problems	.21***	.18***	.11*	.07	.08*	.03
Instructional dollars per pupil	.06	.07	.02	.00	.03	-.04
Percent non English speaking	-.09*	.03	-.09*	-.02	.01	-.00
Block 6						
People available to teach reading	-.05	-.02	.00	-.07	-.02	-.00
People available to teach writing	-.01	.02	-.02	.01	.01	.00
School writing programs	-.04	-.01	.04	-.03	.00	.02
Reading specialists	-.07	-.02	-.01	-.03	.01	.01
Minimal competency test: Reading	.10*	-.02	.01	.04	.02	-.03
Minimal competency test: Writing	.11*	-.00	.00	.08	.09	-.02

Appendix Table 1, cont.

Block 7

Writing courses: undergraduate	.05	.04	.00	.02	.04	-.01
graduate	.04	.10*	.01	.00	.06	-.00
inservice	-.00	.03	.02	.00	.03	.03
Reading courses: undergraduate	.04	.02	-.03	-.00	.03	-.02
graduate	.01	.04	-.04	-.01	.04	-.05
inservice	-.00	.02	-.03	.04	.02	-.00
Teacher's reading: literature	-.02	-.03	.07	-.01	-.02	.04
professional	-.01	-.01	-.02	-.02	.00	-.02
non-fiction	-.05	-.03	-.03	-.02	-.00	-.01
Years of teaching	.02	-.02	.03	.02	-.00	.03
Highest certificate	.04	.01	.02	.00	-.02	.02

Block 8 (Materials)

Reading: interest	-.07	-.00	-.06	-.04	.00	-.05
: challenge	-.00	-.06	-.13**	-.02	-.02	-.10*
Writing: interest	.04	.02	-.03	.07	.02	-.00
: challenge	-.00	-.02	-.03	.03	.01	-.06

Appendix Table 2. Zero-Order Correlations and Betas-to-Enter for Variables Included in Regression on Writing Proficiency

	Zero-Order Correlation			Beta-to-Enter, After Previous Blocks		
	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
Block 1						
Region 1 (northeast)	.12***	.04	.04			
Region 2 (southeast)	-.09*	-.01	-.04			
Region 4 (west)	-.02	-.04	-.01			
Urban 1 (urban)	-.04	-.05	-.08			
3 (Rural)	-.06	-.03	.03			
Orshansky Percentile	-.25***	-.21***	-.19***			
Block 2						
Parent Education 1 (less than h.s.)	-.15***	-.17***	-.20***	-.12**	-.13**	-.15***
2 (high school)	-.06	-.10	-.12**	-.04	-.10*	-.13**
4 (unknown)	-.12**	-.17***	-.14**	-.13**	-.15***	-.12**
Reading material in the home	-.32***	-.27***	-.24***	-.27***	-.23***	-.21***
Family reading activities	-.11*	-.12**	-.06	.06	-.19***	-.03
Family writing activities	.06	-.20***	-.07	-.08	-.12**	-.06
Block 3						
Gender (female)	.19***	.08	.33***	.21***	.08*	.33***
Race 2 (black)	-.30***	-.26***	-.27***	-.24***	-.22***	-.20***
Race 3 (hispanic)	-.14**	-.14**	-.15***	-.05	-.02	-.02
Race 4 (other minority)	.02	.01	.01	.01	.01	.02
Language in the home 2 (spanish)	-.14**	-.11**	-.13**	-.06	.00	-.03
Language in the home 3 (other non English)	-.08	-.04	-.07	-.06	.00	-.05
Block 4						
No TV	.02	.05	.02	.00	.03	-.02
Excessive TV (6+hours)	-.25***	-.15***	-.13**	-.16***	-.07	-.07*
Block 5						
School type 2 (private)	.08	.08	.06	.03	.00	.00
School type 3 (Catholic)	.07	.10*	.08	-.00	.04	.03
Enrollment	-.14**	-.05	-.02	-.06	-.03	.02
Racial balance	.03	.08	.10*	-.00	-.01	.04
School problems	.27***	.17***	.19***	.12**	.06	.09*
Instructional dollars per pupil	.11*	.02	-.02	.07	-.01	-.02
Percent non English speaking	-.02	.01	-.08	.05	.00	-.00
Block 6						
People available to teach reading	-.04	-.02	.01	-.05	-.00	.02
People available to teach writing	.02	.01	.02	.03	.01	.06
School writing programs	-.00	-.02	.08	-.02	-.01	.05
Reading specialists	-.06	-.04	-.05	-.01	-.00	-.03
Minimal competency test: Reading	.12**	-.01	.02	.06	-.03	-.02
Minimal competency test: Writing	.12**	-.01	.04	.09	.05	.03

Appendix Tabel 2 cont.

Block 7

Writing courses: undergraduate	.02	.02	.01	.00	.01	-.03
graduate	.08	.03	.02	.04	.00	.00
inservice	.03	.00	.04	.03	.00	.04
Reading courses: undergraduate	-.04	-.00	-.01	-.03	.00	-.01
graduate	.02	.01	-.06	.02	-.00	-.05
inservice	-.00	.01	.03	.03	.02	.04
Teacher's reading: literature	-.00	-.03	.08	.00	-.01	.04
professional	-.00	-.01	.00	.00	.00	-.01
non-fiction	-.03	-.01	.00	.00	.02	.00
Years of teaching	.05	-.04	.04	.05	-.01	.01
Highest certificate	.08	-.03	.01	.07	-.03	.00

Block 8 (Materials)

Reading: interest	-.12**	-.06	-.02	-.06	-.05	.00
challenge	-.07	-.03	-.10*	-.06	.00	-.05
Writing: interest	.00	.02	-.07	.01	.02	-.06
challenge	-.02	.01	.02	.02	.03	.00

Appendix Table 3. Zero-Order Correlations and Betas-to-Enter for Variables Included in Regressions on Reading Attitudes

	Zero-Order Correlation			Betas-to-Enter, After Previous Blocks		
	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
Block 1						
Region 1 (northeast)	.00	-.01	-.02			
Region 2 (southeast)	-.04	-.02	-.00			
Region 4 (west)	.03	.04	-.01			
Urban 1 (urban)	-.06	-.08	-.09*			
3 (Rural)	-.00	-.03	.01			
Orshansky Percentile	-.07	-.05	-.05			
Block 2						
Parent Education 1 (less than h.s.)	.00	.02	.02	.00	.03	.05
2 (high school)	-.02	.02	.08	-.01	.03	.09
4 (unknown)	-.00	.06	.05	.15***	.07	.06
Reading material in the home	.12**	.11*	.13**	.14***	.13**	.16***
Family reading activities	.41***	.60***	.37***	.43***	.60***	.39***
Family writing activities	.38***	.46***	.38***	.38***	.46***	.38***
Block 3						
Gender (female)	-.07	-.10*	-.08	-.06	-.05	-.08*
Race 2 (black)	-.13**	-.11*	-.16***	-.07	-.05	-.14***
Race 3 (hispanic)	-.03	-.01	-.01	-.06	-.03	-.00
Race 4 (other minority)	.01	-.05	-.06	-.00	-.04	-.09*
Language in the home 2 (spanish)	-.04	-.01	-.00	-.05	-.04	-.03
Language in the home 3 (other non English)	-.04	-.02	-.03	-.04	-.06	-.06
Block 4						
No TV	-.03	-.00	-.01	-.02	-.00	-.00
Excessive TV (6+hours)	.02	.08	.05	.04	.03	.04
Block 5						
School type 2 (private)	.05	-.01	-.07	.04	.03	-.07
School type 3 (Catholic)	-.03	-.05	-.02	-.02	-.03	-.00
Enrollment	-.05	.07	-.01	-.01	.02	-.00
Racial balance	.05	.04	.05	.03	-.01	.02
School problems	.05	-.00	.03	.04	.00	.03
Instructional dollars per pupil	-.02	-.02	-.02	-.04	-.02	-.00
Percent non English speaking	-.03	.04	-.04	-.00	.00	-.01
Block 6						
People available to teach reading	.00	-.00	-.03	-.01	-.00	-.04
People available to teach writing	.02	-.03	-.01	.03	-.00	.00
School writing programs	.00	.02	.01	-.00	.03	.02
Reading specialists	-.01	.02	-.01	-.00	-.00	.02
Minimal competency test: Reading	.04	-.01	.06	-.02	-.00	.04
Minimal competency test: Writing	.01	.00	.05	.03	-.00	.05

Appendix Table 3, cont.

Block 7

Writing courses: undergraduate	-.01	.00	.01	-.00	.02	-.04
graduate	-.01	.00	-.02	-.01	-.00	-.02
inservice	-.03	.00	.01	-.05	.01	-.00
Reading courses: undergraduate	-.01	-.02	-.03	-.02	.00	-.05
graduate	-.03	-.02	-.01	-.01	-.03	.01
inservice	-.01	.00	.01	-.01	.00	.00
Teacher's reading: literature	-.01	-.02	-.07	.00	-.01	-.05
professional	.00	-.00	.03	-.00	.00	.01
non-fiction	.00	.06	.00	.00	.04	-.00
Years of teaching	-.02	-.03	-.01	.02	-.01	-.01
Highest certificate	.02	.01	-.03	.06	-.02	-.03

Block 8 (Materials)

Reading: interest	-.01	.03	.04	.04	-.01	.08
: challenge	.00	.03	.06	.00	-.00	.14**
Writing: interest	.01	-.01	-.01	-.02	-.03	-.05
: challenge	.01	-.02	.02	.01	-.02	-.00

Appendix Table 4. Zero-Order Correlations and Betas-to-Enter for Variables Included in Regressions on Writing Attitudes

	Zero-Order Correlation			Betas-to-Enter, After Previous Blocks		
	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
Block 1						
Region 1 (northeast)	-.02	.05	.04			
Region 2 (southeast)	-.03	-.02	-.05			
Region 4 (west)	-.02	-.05	-.05			
Urban 1 (urban)	-.06	-.06	-.06			
Urban 3 (rural)	.03	-.02	.03			
Orshansky Percentile	-.07	-.10*	-.08			
Block 2						
Parent education 1 (less than h.s.)	-.01	-.04	-.00	-.00	-.02	.02
Parent education 2 (high school)	-.01	.04	.07	-.02	.04	.06
Parent education 4 (unknown)	.08	.04	.02	.09*	.06	.03
Reading material in the home	.04	.01	.07	.05	.04	.10*
Family reading activities	.32***	.34***	.25***	.34***	.34***	.27***
Family writing activities	.44***	.47***	.38***	.44***	.47***	.38***
Block 3						
Gender (female)	-.19***	-.38***	-.34***	-.17***	-.34***	-.34***
Race 2 (black)	-.13**	-.16***	-.14**	-.07	-.09*	-.11*
Race 3 (hispanic)	-.06	-.08	-.05	-.05	-.06	-.04
Race 4 (other minorities)	-.01	-.04	-.04	-.01	-.04	-.06
Language in the home 2 (spanish)	-.06	-.05	-.02	-.03	-.04	-.03
Language in the home 3 (other non English)	-.05	-.00	-.02	-.03	-.04	-.04
Block 4						
No TV	-.01	-.01	-.05	-.02	-.00	-.03
Excessive TV (6 or more hours)	-.04	.05	.06	-.01	.02	.06
Block 5						
School type (private)	.04	.02	-.05	.01	.03	-.05
School type (Catholic)	-.00	.04	-.01	.00	.05	-.02
Enrollment	-.07	-.02	-.02	-.01	-.05	-.00
Racial balance	.05	.06	.04	.02	-.01	-.00
School problems	.06	.07	.05	.03	.06	.03
Instructional dollars per pupil	-.01	.02	-.00	-.00	-.05	-.00
Percent non-English speaking	-.04	-.01	-.07	.01	-.03	-.03
Block 6						
People available to teach reading	.01	-.03	-.01	.00	-.02	-.03
People available to teach writing	.01	-.03	-.00	.02	-.01	-.00
School writing programs	-.03	-.03	-.01	-.03	-.02	.00
Reading specialists	-.03	-.02	-.01	-.01	.01	.02
Manual competency testing: reading	.07	.01	.07	.02	-.04	.02
Manual competency testing: writing	.06	.01	.05	.06	-.04	.02

Appendix Table 4 cont.

Block 7

Writing courses: undergraduate	.06	.01	.07	.06	.01	.03
: graduate	-.02	-.03	-.02	-.02	-.01	-.00
: in service	-.01	-.03	-.00	-.03	-.00	-.02
Reading courses: undergraduate	.08	.00	.02	.06	.00	-.00
: graduate	-.03	-.03	-.01	-.01	-.00	.00
: in service	.03	-.03	.00	.04	-.00	.01
Teaching reading: literature	-.02	.00	-.01	-.00	.01	.00
: professional	.04	-.02	.01	.03	-.02	.01
: nonfiction	.00	-.01	.05	.02	-.02	.03
Years of teaching	-.01	-.02	-.03	.02	.02	-.03
Highest certificate	.04	-.02	-.02	.09*	-.04	-.02

Block 8 (Materials)

Reading: interest	-.01	.00	.06	.05	.00	.11**
: challenge	-.00	-.01	.00	.01	-.00	.07
Writing: interest	.04	.03	.01	.04	.04	-.01
: challenge	.03	.01	.04	.07	.00	.01